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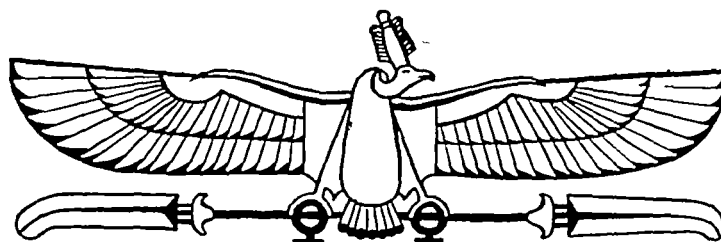
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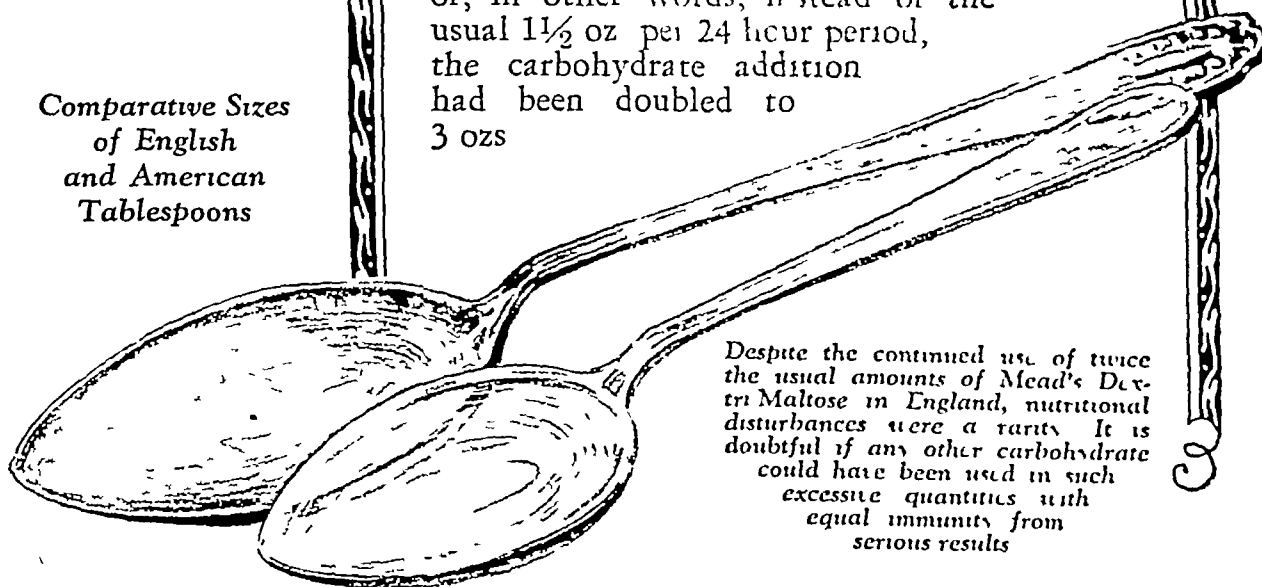
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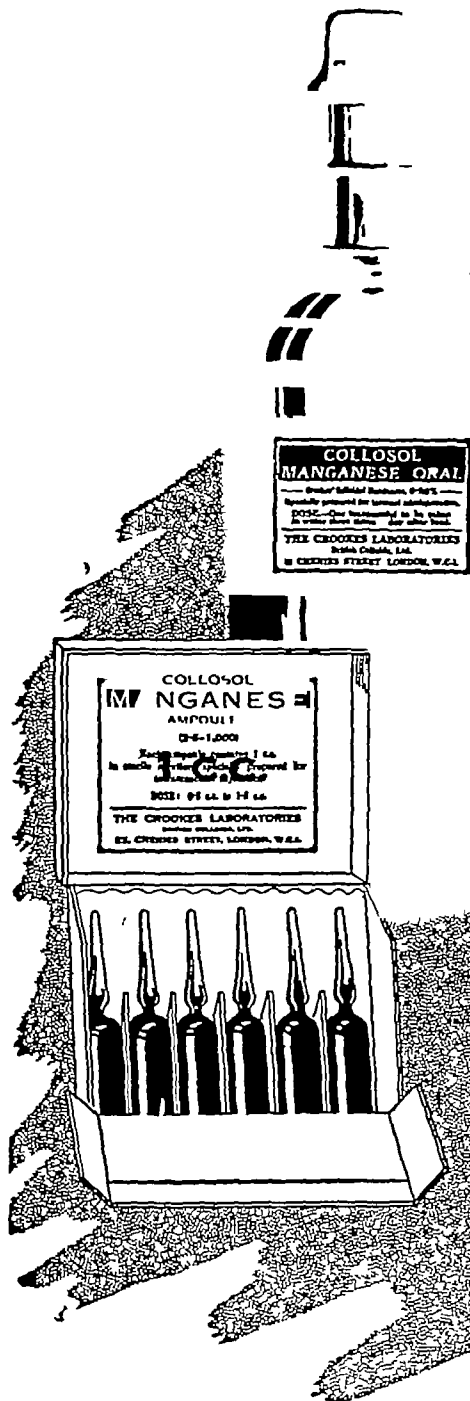
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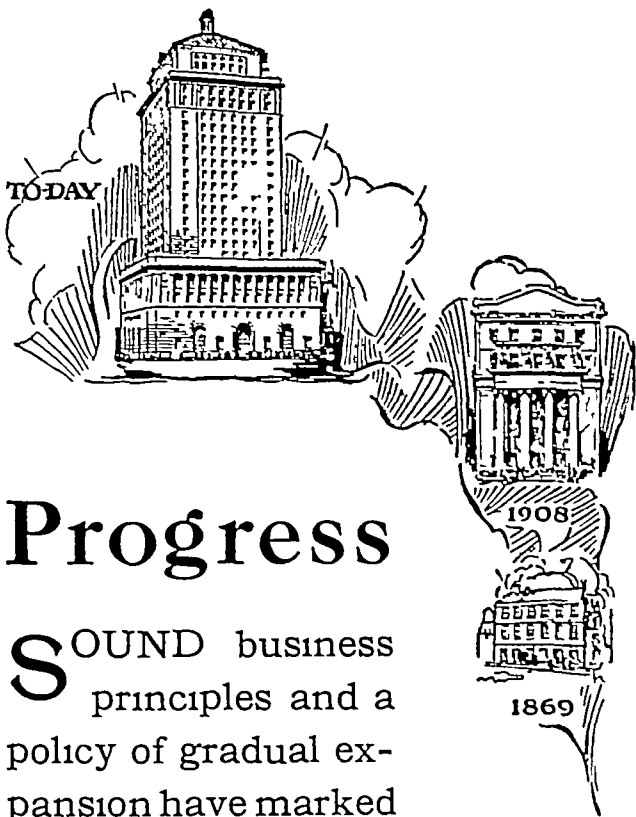
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The Canadian Medical Association Journal

Vol. XIX

TORONTO, OCTOBER, 1928

No. 4

An Address

ON

ACUTE ARTICULAR RHEUMATISM AND OTHER MEMBERS OF THE RHEUMATIC CYCLE*

By C P HOWARD, M.D., AND E S MILLS, M.D.

Montreal

RHEUMATIC fever, like syphilis and tuberculosis, is one of the most disabling diseases that prevails in temperate climates. Rarely do these diseases result in immediate death, but all three lead to insidious anatomical changes in the important viscera, which in the course of months or years result in more or less complete physical disability to the sufferer. Incidentally, this semi-invalidism means a great economic waste to the community from the loss of earning power of the patient, and entails a heavy burden on the hospital, which in turn calls for further state or private expenditure of money. While much has been done to combat the white plague and the venereal evil by popular campaigns, education of the public, establishment of diagnostic and therapeutic clinics, isolation hospitals, sanatoria, asylums, and homes for incurables, only a beginning has been made in the fight against rheumatic fever. It is encouraging to note that there is now "The International Committee for the Study and Control of Rheumatism," with branches in Berlin and Brussels.¹ Any student of the literature will agree with the writers that since the classical article of the late R. P. Howard in Pepper's "System of Medicine"² of 1885 and Chedale's "Lectures on the Rheumatic State in Childhood"³ of 1889 there have only been three important contributions to our knowledge. These are in order of importance

first, Aschoff's⁴ description of the characteristic histological body that bears his name; secondly, the post mortem recognition of a rheumatic aortitis by Klotz,⁵ Pappenheimer and von Glahn⁶, and, thirdly, the claims for a specific streptococcus by Povnton and Paine,⁷ Beaton and Ainley Walker,⁸ Rosenow,⁹ Small and Birkhaug.¹¹ This organism is supposed by some to circulate as such in the blood stream and by others to have an allergic influence on the tissues from one or more foci (Swift *et al*.¹²)

It is not the purpose of this paper to discuss these points. We have merely undertaken a clinical study. For many years it has been known that acute articular rheumatism itself is possibly more frequent and certainly more severe in Montreal than in the other large medical centres of the continent of North America, though apparently not to the degree that prevails in Great Britain. Such figures as those given by James Bell¹³ in 1850, by C. P. Howard¹⁴ in 1903, and the still more elaborate study of Seegal and Seegal¹⁵ support this contention. It would appear that the same is not true of the complications of rheumatic fever which seem to be as prevalent in Toronto, Boston, Baltimore, New York, and Chicago and in many of the northern American cities as in Montreal, though in Texas and other southern states both rheumatic fever and its cardiac complications are less prevalent (cf. Stone¹⁶).

* From the medical service of the Montreal General Hospital. Given in abstract before the Association of American Physicians, Atlantic City, May, 1928.

INCIDENCE AT THE MONTREAL GENERAL HOSPITAL

During the three years 1925, 1926 and 1927 there were 4,760 admissions to the medical and paediatric clinics, of which 241 were for acute articular rheumatism or for its complications, carditis, chorea and erythema. This gives a ratio of approximately 1 in 20. In other words a little over 5 per cent of the total medical admissions were for the rheumatic state. These 241 admissions represent 226 cases and were made up as follows —

1 Acute articular rheumatism	104 admissions,	96 cases
2 Rheumatic cycle	137 admissions,	130 cases
Total	241 admissions,	226 cases

For purposes of statistical study, we will refer to the number of cases rather than to the number of admissions and will deal separately with the two groups.

Sex—There were 115 males, (58 of Group I and 57 of Group II), and 111 females (38 of Group I and 73 of Group II), an almost equal distribution of the sexes. In the general medical admissions, however, there are almost two males for one female, so it would appear that the female sex is specially susceptible to the rheumatic infection. It will be seen that this is notably true of the rheumatic cycle group, no doubt because of the greater incidence of chorea in girls.

Age—Eighty per cent of the entire series of 226 cases occurred between the 10th and 40th years in both sexes. There was a slightly greater prevalence of females in the first two decades. Our figures only confirm the observation of others that acute articular rheumatism is largely a disease of childhood and early adult life, and that it is rare at the extremes of life, twenty-five cases occurring in the first decade and only five in the seventh.

TABLE I

Age	Male	Female
1-10	10	15
10-20	23	36
20-30	26	29
30-40	33	13
40-50	16	13
50-60	4	3
60-70	3	2
	115	111

Race and Birth Place—Of the 226 cases there were 120 English Canadians and 19 French Canadians, a ratio of approximately 6 to 1,

whereas the normal ratio of admissions to the hospital is 2 to 1. The next largest group is the foreign and native born Hebrew, which includes 35 cases, this too is out of proportion to the normal ratio. The English born (20 cases), Scotch (9 cases) and Irish (7 cases) are the other large groups. The remaining sixteen cases came from the United States and various European countries.

Occupation—The school child formed the largest group comprising 62 cases, next came housewives with 39, clerks and stenographers formed the next largest group with 21 cases, but were closely followed by the day labourers, of whom there were 20 cases. Nurses formed the fifth largest group (16 cases). The occupations of the remaining 68 cases were so varied that an analysis of them would not prove of much value. Suffice it to say that in 31 instances it was of the strenuous outdoor variety (including 7 sailors) while 37 followed indoor occupations of the more sedentary variety. In short, there were only 20 labourers and 31 others a total of 51 cases whose work exposed them to changes of temperature, wetting and arduous toil. The remaining 175 cases (78 per cent) were school children, housewives, clerks, nurses, physicians, students, factory hands, waiters, etc., in whom exposure and great physical effort could play no etiological rôle.

Month of Admission—Forty-six per cent of the total admissions occurred in the first four months of the year while the remaining 54 per cent occurred in the other eight months.

TABLE II

January	24	May	27	September	21
February	31	June	9	October	12
March	25	July	15	November	15
April	32	August	16	December	14
	112		67		62
	46.4 per cent		27.9 per cent		25.7 per cent

This prevalence during the winter months in Montreal is striking in view of the relatively dry cold that prevails. Of course, during these months the ventilation in the school-room, factory and home is not good as in many cases the windows are kept closed to economize the heat. Then, too, the child or adult often goes out into the cold street improperly clad.

Family History—In the family record of 59 patients, there was a history of heart disease, chorea or arthritis in at least one of their

parents or brothers or sisters. This gives an incidence of only 26 per cent, as compared with 35.5 per cent reported by Faulkner and White.¹⁷ We realize that either figure is a low estimate, as many cases of arthritis and even chorea in the family are soon forgotten by the patient.

Past Medical History—Sixty-seven per cent of the series of 226 patients gave a previous history of chorea (23 cases), tonsillitis (89 cases), or acute articular rheumatism (121 cases). Again this figure is probably low, as mild tonsillitis is often overlooked, and mild arthritis mistaken for growing pains, strain or injury. In addition, 34 patients, or 10 per cent of the series, gave a history of previous scarlet fever, possibly a disease related biologically to rheumatic fever.

Mode of Onset—In the acute articular rheumatism group of 96 cases the onset was sudden in 64 (66.6 per cent) and insidious in 32 (33.4 per cent). The disease was ushered in by acute tonsillitis in 37 of these (38.5 per cent). As one would expect, in the other group the common mode of onset was insidious in 99 cases (76.2 per cent) and acute in 31 (23.8 per cent). The combined figures of the entire series of 226 cases give an acute onset in 95 (42 per cent) and an insidious onset in 131 cases (58 per cent). The lesson that these figures teach is that a rheumatic infection is often insidious in its onset and by no means invariably acute.

The Arthritis—In the first group of 96 acute articular rheumatism cases there was of course an arthritis in all, with an average involvement of seven joints. It was severe in 9, moderately severe in 40, and mild in 47 patients. In the rheumatic cycle group 30 patients developed arthritis after admission and while under treatment for their admission complaint. In these 30 cases there were many joints involved in six, and only a few in 24. As to the severity of the arthritis in this group, it was described as severe in two cases, moderately severe in five, and mild in the remaining twenty-three cases.

To summarize of the entire series of 226 cases, one hundred and twenty-six were admitted with arthritis or developed it under observation, an incidence of 55.7 per cent. Many of the remainder, in fact 54 patients, gave a previous history of one or more attacks of arthritis, which, added to the 126 seen by us gives a total incidence of 180 patients, or 80 per cent of the

entire series, with an arthritis. There can be no doubt, therefore, that this is the most common of all the symptoms of a rheumatic infection.

Fibro-Myositis, or so-called muscular rheumatism, was extremely rare and was only noted twice in the combined groups.

The *subcutaneous fibroid nodules* described by Barlow¹⁸ and many of the English school as the characteristic lesion of the disease were found by us in only four cases. This low incidence can only have two explanations: first, the relatively small number (twenty-five cases) of children, in whom the nodules are most frequently seen, secondly, the lack of thorough and repeated search for the nodules by a trained observer. It is a truism that unless searched for they will be often overlooked as they are usually quite painless and are so small that an ordinary routine physical examination will fail to reveal them. Coates¹⁹ reports finding them in 18 of 23 rheumatic children, (80 per cent). They were found by us on the fingers of a sixteen-year old Russian girl, with a mild arthritis and mitral endocarditis, over the wrists and elbows in a Russian Jewess of 37, with erythema multiforme, purpura and arthralgia, on the fingers of a Canadian man of 25, with chronic rheumatic endocarditis of the mitral and aortic valves, during an acute exacerbation, and, lastly in a Roumanian Jewess of 14 years, with an extensive pericarditis, over the fingers, backs of the elbows and scalp, in her fourth admission during the year subsequent to our study.

Fever was present in 132 cases of the entire series or 58.4 per cent. It was almost invariably present in the arthritis group, being absent only four times after the patients' admission to the hospital. It was present in 32 cases of the rheumatic cycle group of 130 cases, usually in association with an exacerbation of the arthritis or an acute rheumatic endocarditis. We saw no patient with hyperpyrexia during this three years study. Indeed no case had a temperature above 104 degrees and only 34 cases showed an elevation between 102 and 104 degrees. In the remaining 132 cases the range was between 99.5 and 102 degrees. In summary, therefore, 164 cases or 72.5 per cent of the entire series had slight or moderate fever and in none was hyperpyrexia present.

The Circulatory System—In the arthritis

group the pulse beat was above 100 per minute in 63, between 80 and 100 in 32, and under 80 in one. In the other group the pulse was below 80 in 7, between 80 and 100 in 54, and above 100 in 64 cases. In short, there was very little difference between the two groups, but in general it can be said that there was an acceleration of the pulse in 218 of the 226 cases (96 per cent) and it was a marked feature in 132 of the entire series (58 per cent).

Acute fibrinous or serofibrinous pericarditis occurred in 12 cases of the arthritis group and in 19 of the rheumatic cycle group, or 31 times in the whole series of 226 (13.7 per cent). The serofibrinous type was the exception and only once or twice was it of an extensive grade. The chronic adhesive type or adherent pericardium was recognized but once in the first group and seven times in the other, that is, eight times in the entire series (3.5 per cent). It was sometimes diagnosed clinically and not found post mortem, but also sometimes missed clinically and recognized post mortem. This discrepancy is due to the fact that in rheumatism the extension of the inflammation to the mediastinal tissues is not the rule, and an obliteration of the pericardial cavity alone is hard to recognize, except in the presence of a history of former acute pericarditis, a very dilated heart and some visible evidence of localized retraction of the chest wall. No doubt fluoroscopic examination for fixation of the heart in the thoracic cage and measurements of the rotation of the axis by the electrocardiogram would help in reaching a more correct diagnosis if the patient's condition would permit of these examinations. To summarize thirty-nine of 226 patients, or 17 per cent, had some form of pericarditis under observation.

Myocarditis, this much abused term, implies of course some degeneration of the heart muscle and was years ago stressed by Sturges²⁰ and Coombs.²¹ It no doubt occurs in every case of the rheumatic cycle to a greater or less extent. The finding of the Aschoff body is pathognomonic, but long before this body was known a myocardial degeneration was recognized. In our series it was present clinically in 92 cases, or 41 per cent. We accepted as clinical evidence first, dilatation of the heart to percussion and to the x-ray, second, signs of myocardial insufficiency, such as dyspnoea, oedema

or passive congestion of the lungs, liver or kidneys, and lastly the changes in the electrocardiogram, as described by Cohn and Swift,²² who found some abnormality in the tracings of thirty-five of the thirty-seven cases of rheumatic fever (95 per cent). An electrocardiogram was taken in only 25 cases of our arthritis series and in 16 of these it was reported as normal, in nine others (36 per cent) there was some characteristic abnormality. In the rheumatic cycle group of 130 cases it was recorded in 66, was considered as normal in 7, and pathological in 59 cases (90 per cent). In other words, in the entire series the electrocardiogram was studied in 91 cases and indicated pathological changes in 68 cases (75 per cent), a figure somewhat below that of Cohn and Swift. What were these abnormalities? Briefly stated they were fibrillation of the heart muscle, prolongation of the S-T interval, inversion of the T-wave in leads 1 and 2, notching of 'P' in lead 2, inversion of 'P' in lead 3, and auricular or ventricular extra systoles.

Acute or chronic endocarditis was present in 51 of the 96 cases of the arthritis series (53 per cent), and in 101 of the 130 cases of the rheumatic cycle group (78 per cent) or in the entire series of 226 cases 152 times (68 per cent). In 101 cases the mitral valve alone was involved, in 6 the aortic valve alone, in 44 the aortic and mitral valves were both involved and in two others the aortic, mitral and tricuspid valves were all three involved. The figures will show the predisposition of the mitral valve to the rheumatic virus, as it was affected either alone or in combination in 147 of the 152 cases or 96 per cent.

While the recent studies of von Glahn and Pappenheimer²³ have demonstrated, in a series of 47 consecutive cases of rheumatic cardiac disease, specific lesions of the small peripheral arterioles and capillaries in ten cases, either in the pulmonary or systemic arteries of the kidney, perineal adipose tissue, pancreas, ovary, testis, etc., yet the larger peripheral arteries do not seem specially liable to acute inflammatory disease in the acute rheumatic fever stage. No case occurred in Group 1 of our series of 96 cases. In the second group of 120 cases the clinical diagnosis of acute arteritis of the left tibial artery was made once in a male of thirty years who was suffering from a chronic rheu-

matic endocarditis of the mitral and aortic valves with an engrafted acute endocarditis. While under observation he developed severe pain and tenderness along the course of the left posterior tibial artery, but unassociated with local redness of the skin or subsequent impairment of the circulation. Unfortunately the tibial artery was not investigated at autopsy.

Two patients, both females of fifty years, revealed marked arteriosclerosis of the retinal or renal vessels, and the one case which came to autopsy showed atheroma of the abdominal aorta as well. Both patients had an associated affection of the thyroid gland in addition to a chronic rheumatic endocarditis of the mitral and aortic valves with the usual signs of cardiac failure, in the one case it was a toxic adenoma, and in the other a hyperplastic goitre. Either of these conditions might have been responsible for the arterial degeneration.

While no special histological study was made of the aorta for Aschoff bodies in the nineteen patients that came to autopsy, the pathologist did note in eight cases various grades of atheroma in the arch of the aorta or the entire length of the thoracic aorta, and in one case in the abdominal aorta. In all but one of these patients there was no evidence of arteriosclerosis elsewhere, and their ages ranged from 37 to 50 years, with an average age of 40 years and six months. Only two of these aortæ were examined histologically and both were considered after a casual routine study to show atheromatous changes. It is our intention to have all these nineteen aortæ most exhaustively investigated. Two other cases were considered clinically as having possibly dilated aortæ, but in only one case was this proved by the x-ray. Both recovered and were discharged well. Moreover, as both had aortic insufficiency, we prefer to regard them as having a dynamic dilatation of the aorta.

To summarize one patient had a possible acute arteritis, one had very marked arteriosclerosis, another had marked arteriosclerosis and atheroma of the abdominal aorta, while seven others revealed various degrees of atheroma of the thoracic aorta. Thus we have a total of 10 patients, or 45 per cent, with arterial changes, possibly due to the rheumatic infection.

The occurrence of a thrombus in one or other

of the chambers of the heart must be almost the rule in chronic rheumatic affection of the mitral valve. It was demonstrated in two patients at post-mortem, while in two others its presence was assumed because of the development of embolic phenomena in the lungs, spleen, kidney or brain. In addition to these, one male patient of 62 years had varicose veins of his legs with some thrombus formation, possibly not of rheumatic origin. However, one woman of 61 years developed a thrombophlebitis of her external jugular vein, but unfortunately no autopsy was permitted. Two others developed while under observation an acute thrombophlebitis of the femoral vein, the left being involved in a female of 41 years and the right in a male of 46 years. In both cases there were marked pain, tenderness, induration and œdema of the leg. Therefore, in at least three of the entire series (13 per cent), and possibly four (2 per cent), there was evidence of an inflammation of the veins. All writers are agreed that thrombophlebitis is an uncommon but authentic complication involving especially the veins of the neck and upper extremity. Sladen and Winternitz²² have collected twenty-six cases which developed in the course of myocardial failure from acute or chronic rheumatic carditis.

The Blood—The blood count in the arthritis group revealed no anæmia in nineteen patients, a slight anæmia (i.e., between 4 million and 4.8 million red blood cells) in thirty-six, a moderate anæmia (i.e., less than 4 million red cells) in twenty-four, while in seventeen there was no record. In the rheumatic cycle group there was no anæmia in thirty-nine, slight anæmia in fifty-seven, moderate in fifteen, severe in one complicated case, and in eighteen cases there was no record. In general, one can say that in the rheumatic infection the blood was normal in fifty-eight patients (30.5 per cent) but revealed a slight anæmia in ninety-three (53.5 per cent), a moderate anæmia in thirty-nine (20.5 per cent) and a severe anæmia in one case (0.5 per cent). It is evident therefore that the rheumatic virus produces soon or later an anæmia of slight or moderate degree in at least 70 per cent of cases as was emphasized by Trousseau many years ago.

In the first group the leucocytes averaged 12,800 per cmm. They were normal in fifteen cases, slightly elevated (9,500 to 10,500) in

eight patients, sometimes assigned to the salicylate therapy. Herpes zoster occurred but once.

Cerebral embolism, with a resultant hemiplegia, is one of the most distressing and disabling nervous complications. It occurred fortunately only in three cases, in all of course as a result of a rheumatic endocarditis and a subsequent loosening of a small thrombus, either from the valve itself or more probably from the left auricle. Two of the three embolisms resulted in a right sided hemiplegia and motor aphasia.

TREATMENT

All the cases were, needless to say, in bed for weeks at a time, in fact, the average hospital stay for the entire series was forty days, or practically six weeks. They all received a light diet and plenty of fluids. Salicylates, either in the form of sodium salicylate or tolysin, were administered to one hundred and thirty-three of the entire series (59 per cent) at some time during their stay. The newer preparations of silver, such as "Fulmaigin" and "Septakrol," were not tried. Locally lead and opium or oil of wintergreen compresses were used during the acute stage of the arthritis. Baking was tried in the more protracted cases. In thirty-five cases (15 per cent) a tonsillectomy was performed, in the hope of eradicating the focus of infection and so preventing further attacks.

RESULTS

In the first group there were forty cases considered as cured, that is to say, with normal hearts and throats and joints. Only six were considered cured in the second group, a total then of thirty-six cured or 20 per cent. In the first group there were fifty-four cases, and in the second group ninety-one, discharged as improved, by which we mean the heart was compensated, though of course damaged, a total of one hundred and forty-five or 64 per cent. Fourteen were unimproved and usually left the hospital against advice or refused treatment, in other words, 6 per cent were unimproved on discharge. Twenty-one cases died in the second group, but not a single one of the arthritis or first group. This gives a mortality for the entire series of a little over 9 per cent.

SUMMARY

During three years at the Montreal General Hospital there were 4,760 medical and paediatric admissions, of which 241 were for acute articular rheumatism or its complications, carditis, chorea and erythema, an incidence of 5 per cent.

An arthritis occurred in 55.7 per cent, under observation, but if one includes the arthritis noted in the past medical history, it was present at some period of the disease in 80 per cent.

Of the cardiac manifestations, there was an acute or chronic endocarditis in 68 per cent, myocarditis in 41 per cent, and pericarditis in 17 per cent.

Only 4.5 per cent of the series showed definite arterial disease.

There was a slight or moderate anaemia and a leucocytosis of some degree in 70 per cent of the series.

Tonsillitis occurred in 46 per cent. Acute or chronic pleurisy was surprisingly frequent (15.3 per cent). Chorea was present in only 13.3 per cent of the series, comprising as it did but a small number of children.

Some form of erythema or purpura was noted in 9 per cent.

The average hospital stay per patient was six weeks. Twenty per cent were discharged as "cured", 64 per cent as improved, and 6 per cent as unimproved. There was a mortality of 9 per cent.

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An Address

ON

UTERINE HÆMORRHAGE AND ITS TREATMENT*

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IN the *Journal of the American Medical Association* for May 27, 1922, I gave a bird's-eye view of the various conditions that produce uterine hæmorrhage¹ In the present paper I shall endeavour to bring the subject up to date, and also indicate the methods of treatment that have been found most satisfactory in the handling of the individual lesions

The conditions causing uterine hæmorrhage fall into two main groups (1) those dependent on recent pregnancy, and (2) those independent of recent pregnancy If we bear in mind these two, the study of uterine hæmorrhage becomes much easier

UTERINE HÆMORRHAGE DEPENDENT ON RECENT PREGNANCY

This occurs with (1) premature separation of the placenta, (2) retained membranes, (3) hydatidiform mole, (4) chorio epithelioma, (5) tubal pregnancy, and (6) pregnancy in one horn of a bicornate uterus

Premature Separation of the Placenta—In such a case, the physician is aware that pregnancy exists, and he understands the cause of the bleeding His chief aim is to keep the patient quiet and prevent a miscarriage, if

feasible The possibility of placenta prævia is always in mind, and he will naturally be on the lookout for this condition

Retained Membranes—Here also the patient usually gives a history of pregnancy Every physician, however, encounters patients who stoutly deny the possibility of pregnancy, and do their best to mislead the physician, in order that he may innocently dilate and curette, and bring away the fetus and membranes In the typical case in which no criminal operation has been attempted, and in which the patient does her best to co-operate with the physician, there is a history of missing one or more menstrual periods, then bleeding has commenced, then a fetus has escaped with some water, and the after-birth has or has not been expelled In such cases dilatation of the cervix and gentle curetting will bring away any remaining portion of the after-birth and the diagnosis will be definitely settled by the finding of villi or shreds of villi in the tissue removed

In taking the history, one must ascertain if possible, whether or not the fetus has actually been seen If it has well and good, if not tubal pregnancy must be borne in mind because more than once the expulsion of a decidual cast from the uterus has been taken for a miscarriage, and the existing tubal pregnancy completely over-

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looked. This phase will be considered more in detail under tubal pregnancy.

Hydatidiform Mole—Now and again a pregnancy will apparently proceed normally for two or three months, and then there may be a little brownish discharge, or the patient may not feel particularly well. The case is watched for a month or two, when it is realized that something is radically wrong. The physician does not want to terminate a normal pregnancy, and yet he cannot afford to neglect his patient. Finally, it becomes clear that the uterus must be emptied, and he dilates the cervix and at once encounters quantities of small cysts that vary in size, and remind one of the variation in size of the individual grapes seen when a grapevine has worn out or gone to seed.

Now and then, as the uterus containing a hydatidiform mole increases in size, a multilocular cystic tumour develops on each side of the uterus. A knowledge of this fact materially aids one in making the diagnosis. These multilocular cysts are filled with relatively clear fluid. They are lined with several layers of lutein cells, and scattered throughout the stroma of the enlarged ovary are rows or clumps of these cells. I have never seen these multilocular lutein cysts except in association with a hydatidiform mole or with chorio-epithelioma. After removal of the mole, the cysts tend to disappear, and the ovary may again assume its normal size.

Dr. George Briel, resident surgeon at the Church Home and Infirmary, recently had a case of hydatid of the uterus with multilocular ovarian cysts on each side.

CASE 1

The patient, V. S., aged 20, was admitted to the Church Home and Infirmary on December 6, 1927, with the history of having missed her periods since September 7th. Five weeks before admission she began to have vaginal bleeding which never increased in amount. She later had nausea, swelling of the ankles, puffiness of the eyes, a lack of appetite, abdominal distention and frequent urination. Examination revealed a pregnancy of about four months' standing, with the patient showing signs of early toxæmia. She had a blood pressure of systolic 176, diastolic 80. After watching the patient for several days, it was felt that a therapeutic abortion was indicated. This was done on December 10th. Curettage brought away a large quantity of hydatidiform tissue. Most of the mole was removed, but, as the patient's condition was precarious, complete removal was not attempted.

She had a stormy convalescence with high temperature. When the packs were removed the remaining portion of the mole and placenta came away. On December 24th, the cervix was found in its normal position, the uterus was large and boggy, and on each side of the uterus was a mass about the size of a

grape fruit. She was seen two weeks later, and at this time there was no trace of either cyst. It is remarkable that two large ovarian cysts should shrink so markedly in the course of fourteen days and leave normal ovaries behind.

Chorio-Epithelioma—Occasionally, after a hydatidiform mole has been removed, the patient continues to bleed. Examination discloses that the uterus is enlarged, and now and then a metastasis may be noted in the vagina or elsewhere. When the process is advanced, hæmoptysis may be noted, due to metastases in the lung. After a hydatidiform mole has been removed, one is always fearful that a chorio-epithelioma may develop or may have existed prior to the removal of the mole. In some cases of chorio-epithelioma, no history of a previous mole can be elicited.

The histological pictures of hydatidiform mole and chorio-epithelioma are very much alike. The large cystic villi, the proliferation of Langhans' layer, and the marked outgrowth of the syncytium with vacuolization, are present in both cases. In order to differentiate between simple hydatidiform mole and chorio-epithelioma, it is necessary to examine a section from the wall of the uterus, and of course this is possible only after the organ has been removed. A diagnosis of chorio-epithelioma should never be made from scrapings. The finding of coagulation necrosis of the tissue lining the cavity of the uterus, when the diagnosis lies between chorio-epithelioma and hydatidiform mole, is strong presumptive evidence of malignancy, but even then it is unwise to make a positive diagnosis. One must either go ahead and remove the uterus in suspicious cases, or watch carefully for developments.

We cannot be too careful in the examination of tissue removed shortly after pregnancy. The uterine musculature just beneath the placenta in the early months of pregnancy often contains large, suspicious-looking cells, which seem to represent the normal reaction of the stroma and muscle cells to the stimulus of pregnancy. Were they to be encountered in the uterine wall in the absence of pregnancy, sarcoma would be suspected, but, occurring when early pregnancy has existed, they are normal. Bilateral multilocular corpora lutea cysts are frequently associated with chorio-epithelioma.

Tubal Pregnancy—Thirty years ago, few physicians knew anything about tubal preg-

nancy To-day, nearly all cases can be recognized when rupture occurs, and many of them are diagnosed before rupture takes place, at a time when operation can be performed with relative ease and little danger to the patient The previous history in the majority of these cases is well known probably one pregnancy several years before and no conception since then, a period a few days or a month late, then a little bleeding more or less, but continuous, a little pain to the right or left of the uterus, and in some cases a premonition of impending danger On pelvic examination, a small mass may be felt to one side of the uterus, and when a clot has formed in the pelvis, this may be felt breaking up under the finger, as rather firm jelly would do

Our duty is to watch for new signs that will enable us to recognize tubal pregnancy at an early stage In 1905, while examining a coloured woman under anæsthesia, just prior to operating, I found a small multinodular myomatous uterus and a nodule to one side of the uterus that gave a totally different sensation to the examining finger On gentle pressure it had a velvety feel, on deep pressure it was firm I diagnosed tubal pregnancy without reading the history, and operation disclosed an unruptured tubal pregnancy The velvety feel² was undoubtedly due to the engorged vessels in the wall of the tube

Years ago, I examined scrapings from a uterus in which the surface epithelium was intact, and the glands near the surface were slit-like and in their deeper portions hypertrophied The stroma of the mucosa just beneath the surface had been converted into typical decidua I wrote the attending physician that a pregnancy existed somewhere. He removed a large myomatous uterus which filled the abdomen, and in the right tube, which lay up under the liver, was a fetus From the appearance of the uterine mucosa it was certain that an extra-uterine pregnancy existed somewhere In this connection an instructive case may be cited

CASE 2

The patient had gone over her period a few weeks and had had some bleeding She was curetted, and microscopical examination revealed the surface epithelium intact, the glands slit-like near the surface and characteristically hypertrophied in the depth, while the stroma of the mucosa just beneath the surface had been converted into decidua Although thickening of the tube could not be felt, even with the patient under anæsthesia, a diagnosis of unruptured tubal pregnancy

was made, and at operation, next day, a tubal pregnancy, not more than 1 cm in diameter, was found.

On November 11, 1927, I saw a most interesting case

CASE 3

Mrs H. L. C., aged 37, had been married six months. The last period had occurred six weeks before consultation It was of three days' duration and excessive, and from that time on there had been slight bleeding every day On pelvic examination everything appeared normal. On November 12, 1927, at the Church Home and Infirmary, we again examined the pelvis and the structures seemed perfectly normal We curetted and obtained nothing It was obvious, however, that some pelvic condition was responsible for the bleeding, and as the patient lived at a distance, I felt it wise to make a small abdominal incision.

The right tube and ovary were normal, the uterus was normal Situated in the left tube, about 4 cm from the uterus, was a small oval thickening about 8 mm. long and 4 mm broad (Fig 1) By transmitted light, a little dark object was seen in the centre The outer end of the tube beyond this was normal We removed the outer half of the tube, leaving about 4 cm of normal tube on the proximal side The outer end of this was slit, making a fairly presentable fimbriated end

The specimen was taken for examination by Dr Streeter, the head of the Carnegie Laboratory of Embryology at Johns Hopkins, who had serial sections made (Fig 2) The small dark mass noted was blood, and lying up against this small blood clot were the remnants of an exceedingly early pregnancy

This is the earliest case of tubal pregnancy that I have ever seen, thickening of the uterine mucosa had not yet taken place

In some cases the thickened uterine mucosa is expelled, and the patient, and even the physician, may conclude that a miscarriage has occurred and that all danger is over, whereas the pregnant tube is liable to rupture at any time Everything that escapes from the uterus should be most carefully examined for the fœtus If it be found, tubal pregnancy can in the vast majority of cases be definitely excluded

In the volumes dedicated to the late Sir William Osler on his seventieth birthday, July 12, 1919, I reported a new sign³ that may be of value in the diagnosis of some cases of tubal pregnancy, especially when the tubal bleeding has not been severe, but practically constant

CASE 4

On March 21, 1918, there entered the Church Home and Infirmary a thin, wiry woman who appeared to be nearly sixty years of age, but who was actually only thirty-eight She was the mother of seven children For three weeks she had had pain in the right lower abdomen with intermittent attacks of abdominal distension One week after the onset of the trouble the umbilical region suddenly became bluish black, although there had been no injury whatever in this region Pelvic examination was very unsatisfactory, on account of the marked abdominal distension At operation on March 27th, the uterus was found slightly enlarged, and to the

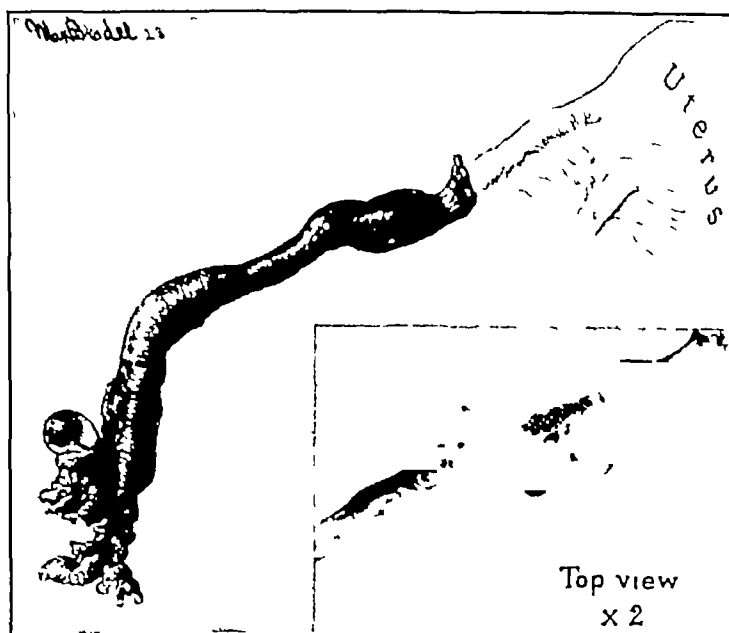


FIG 1—A Very Early Tubal Pregnancy

Mrs H. L. C. Church Home and Infirmary, November 12 1927. Near the middle of the left tube is an area of thickening oval in shape and just distal to this is a small dark spot. The fimbriated end of the tube is normal.

In the right lower corner is an enlargement of the thickened area in the tube. The small dark hæmorrhagic area comes out clearly and a small subperitoneal cyst is seen on the surface of the thickened portion of the tube. There are also two smaller subperitoneal cysts.

For the appearance of the implantation of the ovum in the tube see Fig 2.

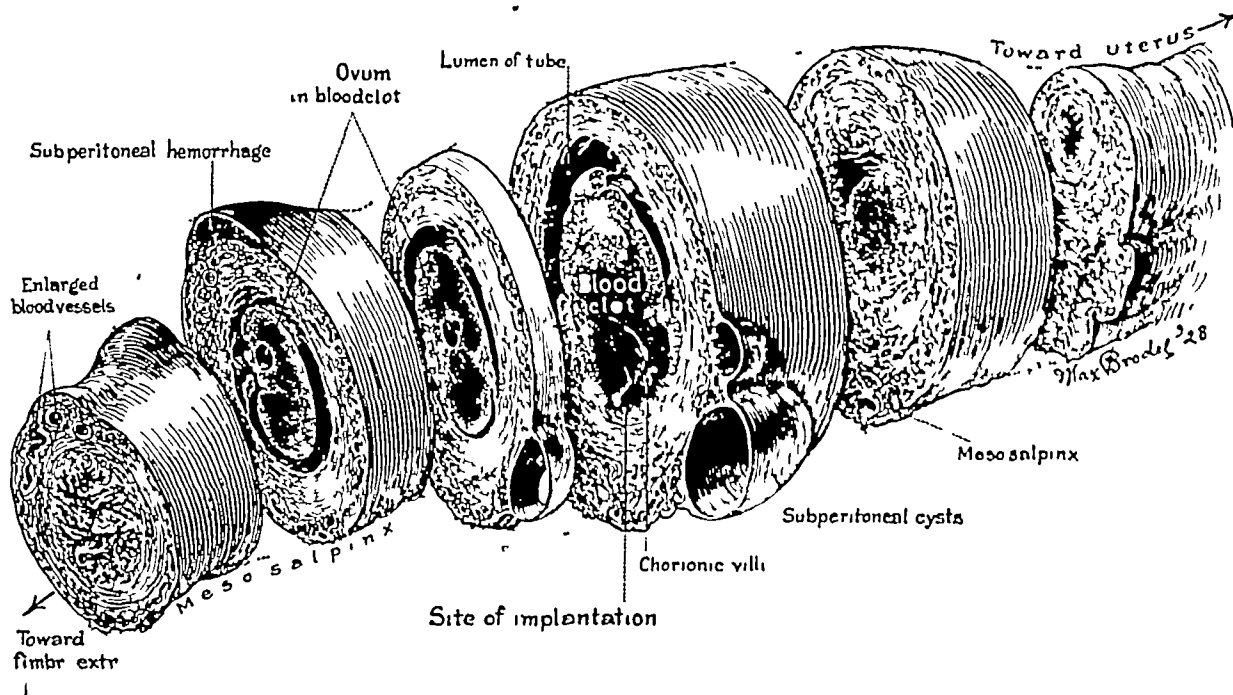


FIG 2—Early Pregnancy in a Fallopian Tube

Mrs H. L. C. Church Home and Infirmary, November 12 1927. Serial sections of the pregnant tube shown in Fig 1 were made by Dr. George L. Streeter, Director of the Carnegie Laboratory of Embryology of the Johns Hopkins Medical School, and Max Broedel has made a reconstructed illustration from Dr. Streeter's slides.

At the right is a cross-section of the tube near its middle. Then in successive sections come cross-sections of the fetal sac which contain blood clot and placental tissue. The embryo had evidently been absorbed. The small hæmorrhagic spot noted in Fig 1, was a subperitoneal hæmorrhage. The other small cysts were simple subperitoneal cysts.

At the left is normal tube again.

right of it was a freely movable mass, about 8 cm long and 5 cm broad. The bluish black appearance of the navel, unassociated with any history of injury, together with a mass to the right of the uterus, made the diagnosis of extra uterine pregnancy relatively certain, though the patient had not missed a period, and there had been no uterine bleeding.

The umbilicus itself was of a greenish hue, above it there was a faint bluish tinge, below it the bluish appearance was more intense. The bluish discolouration gradually diminished in intensity during the patient's sojourn in the hospital. The gradual changes in colour that took place in this region were suggestive of those that occur in a black eye resulting from a blow. At the operation the abdomen was found filled with dark blood, and attached to the fimbriated end of the right tube was an extra uterine pregnancy, which I was able to remove without sacrificing the tube. The patient made a good recovery.

Since that time several other cases of tubal pregnancy with this umbilical sign have been noted. It is hardly necessary to point out that a blue umbilicus does not always mean a tubal pregnancy, it merely indicates that there has been free blood in the abdomen. As the most frequent cause of free blood in the abdomen in the female is hæmorrhage from a tubal pregnancy, this umbilical sign will usually indicate an extra-uterine pregnancy with hæmorrhage.

Pregnancy in One Horn of a Bicornate Uterus—Early in my practice I saw a young woman who had missed a period and then started to bleed. On examination I found a uterus which seemed to be a little enlarged, and to one side of it was a well-defined lump. The patient's father was a physician, and after due consideration we concluded that an exploratory operation would be advisable. I made an incision about an inch long and found a bicornate uterus with pregnancy in the right horn. The patient left the hospital in a week and went on to term.

Pregnancy in one horn of a bicornate uterus is really extra-uterine, when considered in regard to the non-pregnant horn. If uterine bleeding exists when there is a tubal pregnancy, we can expect, in some cases at least, bleeding from the non-pregnant horn of a bicornate uterus when pregnancy exists in the other horn.

UTERINE HÆMORRHAGES OCCURRING INDEPENDENTLY OF RECENT PREGNANCY

These naturally fall into the following groups (1) hæmorrhage due to constitutional conditions, (2) hæmorrhage due to benign changes in the mucosa of the cervix and body of the uterus, (3) hæmorrhage due to malignant changes in the mucosa of the cervix and body

of the uterus, (4) hæmorrhage due to the presence of uterine tumours, and (5) hæmorrhage due to diseases of the adnexa.

Hæmorrhages Due to Constitutional Conditions—In cases of hæmophilia and some other diseases there may be a tendency to very profuse periods. Such hæmorrhages naturally come under the care of a physician and not the surgeon, since they are incidental to the medical condition with which they are associated. The cause of the hæmorrhage is evident, and as a rule the constitutional condition, and not the local bleeding, receives attention.

Hæmorrhages Due to Benign Changes in the Mucous Membrane of the Cervix and Body of the Uterus—These include (1) cervical polyp, (2) polyp of the endometrium, (3) hyperplasia of the endometrium, (4) an increased tendency for the mucosa of the cervix and vagina to bleed in elderly persons, and (5) endometritis, with blocking of the cervical canal in women advanced in years.

Simple polyp, no matter where situated, usually conform in histological appearance to the mucosa from which they arise. Nature tends to rid herself of the polyp, and it is gradually extruded. During this process it becomes engorged, and there may be hæmorrhage into the stroma of its tip. When the polyp is exposed and subjected to trauma, its tip may show an inflammatory reaction. Cervical polyp often bleed a little. The patient complains of a slight intermenstrual bleeding, and in cases in which the surface of the polyp is inflamed there may be a slight purulent or watery discharge.

Polyp springing from the mucosa of the body of the uterus consist of uterine mucosa which has been forced into the cavity of the uterus, forming a tongue-like projection. Some of the glands are often dilated, and the tip of the polyp may show some hæmorrhage. The centre of the base of the polyp often contains strands of non-striated muscle, which extend into it from the uterine wall. Polyp in the body of the uterus tend to produce excessive menstrual periods. There may be some slight intermenstrual bleeding as well.

In hyperplasia of the endometrium the mucosa is usually much thicker than normal. The surface may be smooth or show a tendency to be gathered into folds or polyp. The surface epithelium is, as a rule, thicker than normal, and

the epithelial cells tend to be higher and to stain more deeply than usual. Some of the glands are small and round, others are very large. The large and small glands, as has been pointed out by Emil Novak, remind one of the large and small holes in Swiss cheese. The large glands may be tortuous or spherical. Their epithelium is higher than usual, closely packed, and stains more deeply. The stroma of the mucosa is exceptionally cellular, and not infrequently nuclear figures are found in the stroma between the glands.

In no other condition of the endometrium do we, as a rule, find nuclear figures in the stroma, though they are normally present in the epithelial cells. Occasionally, large venous sinuses are found scattered throughout the stroma, sometimes partially or completely filled with organizing blood. Hyperplasia of the endometrium is invariably accompanied by profuse and prolonged menstrual periods. The condition is usually noted during the child-bearing period, but I have observed it in a girl of sixteen years, of so severe a degree that when she entered the hospital the hæmoglobin was only 30 per cent. On curettage we removed several tablespoonfuls of mucosa.

After curettage, the periods are usually relatively normal for from three to five months, and then curettage again becomes necessary. Sometimes, after four or five curettings the patient is permanently relieved of her symptoms.

Hyperplasia is one of the most frequent causes of profuse menstrual periods. There is usually no intermenstrual discharge, and on histological examination of the scrapings there is not the slightest resemblance to cancerous tissue.

Increased tendency for the mucosa of the cervix and vagina to bleed in elderly women. In some elderly women there is marked atrophy of the vagina, and the retracted cervix merges almost imperceptibly into the vaginal mucosa. In some of these cases, no matter how careful the assistant is in washing up the vagina, there is a considerable amount of hæmorrhage, blood oozing from fine points on the vulva, vagina and cervix. Any appreciable contact in such a case will tend to cause slight bleeding.

Mild endometritis, with blocking of the cervical canal in women advanced in years.—When a woman of sixty years or more says that since her menopause, ten or more years before, she has had no discharge until the last week or

two, and that this is blood-tinged and slightly irritating, we at once suspect cancer. On several occasions I have examined such patients and found the cervix normal in appearance. On curettage I have been surprised to obtain so little mucosa. This on microscopical examination has shown marked atrophy of the mucous membrane of the body, together with a mild infection of the endometrium. There has been a slight infection, the cervix has become occluded, the secretion has collected, and, finally, the cervix has opened up again. The occasional occurrence of these cases should not, however, lull us into a false sense of security. Every woman beyond the menopause who has bleeding should be examined, and if the cause does not then become evident, the uterus should be curetted and the scrapings examined microscopically.

Hæmorrhage Due to Malignant Changes in the Mucosa of the Cervix and of the Body of the Uterus.—These include (1) squamous celled carcinoma of the cervix, (2) adenocarcinoma of the cervix, (3) adenocarcinoma of the body of the uterus (squamous celled carcinoma of the body is rare), and (4) sarcoma of the endometrium.

The vaginal portion of the cervix is covered by squamous-celled epithelium. The cervical canal is lined with the mucosa which produces the mucous plug during pregnancy. The glands of this mucosa are of the racemose variety, and the epithelium lining them is of a very high cylindrical type. The cavity of the uterus is lined with a mucous membrane which usually varies from 2 to 4 mm in thickness. Its glands are tubular, and between them is a very unusual stroma whose cells, as we have seen, become of the decidual type when pregnancy exists inside or outside the uterus. From any of these three kinds of mucous membrane, cancer may develop. Accordingly, we have three varieties of cancer of the uterus, squamous celled carcinoma of the cervix, adenocarcinoma of the cervix, and adenocarcinoma of the body of the uterus.

Advanced carcinoma of the cervix is readily recognized as a large friable growth which too frequently involves the entire cervix and extends to the surrounding vaginal mucosa. As a result of the campaign of education waged by the American Society for the Control of Cancer and by local medical societies, patients are coming to the physician earlier and earlier, so

that cases are seen now in which the physician is by no means sure whether the cervix is cancerous or not. These patients should be sent to the hospital to have a wedge of the suspicious area cut out and examined microscopically.

Adenocarcinoma of the cervix frequently begins within the cervical canal, but if the cylindrical epithelium extends down beyond the external os, as it sometimes does, then the adenocarcinoma may be seen on vaginal examination. The diagnosis of this variety of gland cancer is sometimes difficult. It is the most malignant of all uterine cancers, and fortunately the least frequent.

Adenocarcinoma of the body of the uterus can be diagnosed with certainty only from scrapings. As a rule, the diagnosis is easy. When the operator removes a large amount of friable material with the curette, he suspects cancer, and hastens to make a microscopical examination of the sections. There is as much difference between the appearance of the normal lining of the uterus and cancerous tissue as there is between two different patterns of wall paper. The diagnosis is made from the general pattern of the growth, or from individual cell changes, or from both. Now and again several sections must be examined, and occasionally it may seem best to curette again in a month or two, and examine fresh sections. This is, however, rarely necessary.

Sarcoma of the endometrium is rare. When sarcoma is found in the uterus, it is usually in the musculature or associated with uterine myomas. When sarcoma develops in the endometrium it must of necessity arise from the stroma of the mucosa.

CASE 5

Several years ago I saw a patient who had slight uterine bleeding and a small nodule in the breast. The uterus was curetted, and while frozen sections were being made, the breast nodule, which was benign, was removed. Microscopical examination of the scrapings revealed a sarcoma. Complete hysterectomy was done at once, and on the day after operation the patient was in excellent condition, but on the second day her temperature rose to 104° F., on the third day it was again normal, and on the fourth day it rose to 105° F. Malarial organisms were found in the blood, appropriate treatment was instituted, and a normal recovery followed. This case has been reported in full by Brady.

Hæmorrhage Due to the Presence of Uterine Tumours—Tumours of the uterus are divisible into three main groups: (1) myomas, (2) adenomyomas, and (3) sarcomas.

Uterine myomas are very common. Some of them project into the cavity of the uterus. A myoma may reach large proportions without in any way influencing menstruation, but when it encroaches on the uterine cavity the periods are liable to be prolonged. A myoma, not over 2 or 3 cm. in diameter, projecting well into the cavity of the uterus, may cause such severe menstrual hæmorrhage that the patient is almost exsanguinated. In some cases the submucous myoma becomes necrotic in its more dependent parts, and causes a foul and almost continuous watery discharge from the uterus. On examination, a portion of the growth may be seen extending through the cervix. This tissue often feels soft, but on traction is found to be tough. Cancerous tissue, on the other hand, is friable. When a large submucous myoma has been expelled from the uterus it may completely fill the vagina. In such a case the cervix can be recognized as a smooth ring encircling the pedicle of the tumour.

Adenomyomas of the uterus form an interesting group of tumours. Although in a certain percentage of these cases the uterus is not enlarged, in the majority of them it is at least twice the normal size. The inner muscular layers of the uterus are transformed into a coarse, diffuse, myomatous tissue into which the uterine mucosa flows. The thickening may be limited to the anterior or posterior wall, or form a mantle around the entire uterine cavity. In time, portions of the adenomyoma may be forced to the outer surface, forming subperitoneal adenomyomas, or into the cavity, producing submucous adenomyomas. In many cases there are also a few small, discrete myomas scattered throughout the uterus. Adenomyomas generally cause a very profuse and prolonged menstruation, but no intermenstrual bleeding. At the period there may be a grinding pain in the uterus, due undoubtedly to swelling of the many areas of uterine mucosa in the diffuse growth of the uterine wall. Curettage, as a rule, yields perfectly normal mucosa. When adenomyoma exists, the uterus tends to become adherent to the surrounding structures.

Uterine sarcomas are relatively rare. In from 1 to 2 per cent they are associated with uterine myomas. Should a sarcoma develop in the endometrium, it can be diagnosed from scrapings, but in the average case it will be diagnosed

as a myoma, and its true character detected only when the abdomen is opened, or when the tumour has been cut into. Typical sarcoma on section differs markedly from myoma. It is homogeneous, pork-like, not striated, and, as a rule is easily broken up with the finger, whereas the finger makes no impression whatever on the myoma. Occasionally, portions of a sarcoma become submucous, and undergo necrosis and gradual disintegration. In such cases there is a good deal of foul vaginal discharge. Microscopical examination of pieces of the tissue will give the correct diagnosis, although the differentiation between a degenerating myoma and sarcoma is at times somewhat puzzling.

When considering uterine tumours and their differentiation from cancer, we must always remember that the two conditions are occasionally associated in the same uterus. In our series of cases⁸ we found squamous-celled carcinoma of the cervix in more than 1 per cent of myoma cases, and in nearly 2 per cent adenocarcinoma of the body of the uterus complicated the myomatous condition.

Uterine Hemorrhages Due to Diseases of the Adnexa—One of the cardinal signs in tubal pregnancy is uterine bleeding. In cases of purulent salpingitis also, uterine hæmorrhage is a common symptom. Time and again the operator is in doubt as to whether the given case is one of tubal pregnancy or pelvic inflammation. Sometimes he makes a diagnosis of pelvic infection and finds tubal pregnancy, and on the other hand he may diagnose extra-uterine pregnancy, only to find that he is dealing with pelvic infection. Fortunately, in both instances it is necessary to open the abdomen, and the temporary error in diagnosis does not in any way militate against the patient's welfare. If it were essential to make an absolute diagnosis before operation, a curettage would usually reveal decidua when a pregnancy existed, but there would be no sign of decidua in the inflammatory case.

CASE 6

On January 9, 1928, I saw, with my resident, Dr Robert L. Faulkner, at the Johns Hopkins Hospital, a patient (E. T.), who had been married ten years and who had had seven pregnancies. When I saw her she had been ill for more than two weeks. Her temperature, which had been high, had fallen to 101° F., and in the two weeks, as a result of severe bleeding, her hæmoglobin had dropped to 55 per cent.

On pelvic examination, I could feel a mass behind the uterus. The temperature indicated a pelvic inflam-

mation but the severe bleeding suggested the possibility of tubal pregnancy. At operation Dr Faulkner found a pelvic peritonitis and double pus tubes. Such free hæmorrhage with pus tubes is rather unusual. After operation there was no bleeding.

Inflammatory diseases of the ovaries are invariably secondary to and associated with salpingitis, consequently what has been said about uterine bleeding associated with pus tubes applies to inflammation of the ovary.

Ovarian cysts and ovarian tumours occasionally cause slight uterine bleeding. The presence of the tumour, when found to be independent of the uterus, usually gives us the clue as to the hæmorrhage, and with the removal of the ovarian growth the bleeding ceases. It is always well, however, to examine the uterus carefully if the bleeding has been severe. One of our patients who had been bleeding severely had not only a large ovarian tumour with a twisted pedicle, but also a carcinoma of the body of the uterus. When considering the diagnosis and treatment of any given lesion in the pelvis, it is always essential to remember that any one or more of various conditions may be responsible for the hæmorrhage.

A short time ago, when discussing with my house staff the number of cases of uterine hæmorrhage occurring in the Gynecological Department of the Johns Hopkins Hospital during the year, in which no definite cause for the bleeding could be ascertained, it was the general opinion that there had been only ten or twelve such during the twelve months. Thirty or forty years ago, the cause of uterine bleeding in many cases could not be definitely ascertained. Year after year our knowledge has been gradually increasing, until now, in a large clinic, there are not over a dozen cases in a year for which some satisfactory explanation for the bleeding cannot be given.

TREATMENT

I shall say nothing as to the handling of premature separation of the placenta, retained membranes or hydatidiform mole, you are as familiar with the proper method of treatment as I am. When a hydatidiform mole has been removed, the patient should be carefully watched for months, and should bleeding be noted, the uterus should be curetted at once and chorio-epithelioma kept in mind.

When possible, tubal pregnancy should be

diagnosed and operated upon before rupture. When the patient is in shock and almost in *extremis*, one has a strong impulse to operate immediately, but if she can be tided over for a short time and transfused just before or at the beginning of operation, the chances are very much better. Transfusion works miracles in such cases. One point to be noted in the technique when the abdomen is full of blood is this. Just so soon as the tube has been clamped so that its bleeding has been checked, and prior to its removal, it is well to pack a large roll of gauze into each flank, and a large Mikulicz pad into the pelvis. By the time the operator has removed the tube these three pieces of gauze will have soaked up a large part of the free blood and much time will be saved.

Hyperplasia in young people calls for curettage every few months, if the bleeding is excessive. In patients at or near the menopause a dose of radium will bring on the menopause. In carcinoma of the cervix, when the growth is limited to the cervix, the uterus freely movable, and the patient a good risk, the uterus should be removed. On the other hand, if the patient is very anæmic, has renal or cardiac trouble, or if the growth has extended to the vaginal vault, then radium seems to offer the best chance of relief. In cases of carcinoma of the body of the uterus, we invariably do an abdominal hysterectomy. In such cases, we first close the cervix with two mattress sutures, in order that none of the contents of the uterine cavity may escape. The vagina is then tightly packed with gauze and the abdomen opened. As all of you know, hysterectomy for carcinoma of the body of the uterus usually gives excellent and permanent results.

Small and medium-sized fibroids yield readily to radium and x-ray, but one is not always sure of the diagnosis. Three cases that have recently come under my notice may be briefly referred to.

CASE 7

Mrs. J. A. H., aged 40. Her periods for the last few months had occurred every two weeks, and had lasted from seven to ten days. On pelvic examination, the body of the uterus seemed to be about the size of a two or three months' pregnancy. A diagnosis of "fibroids" was made. Operation at the Johns Hopkins Hospital was performed on February 1st, 1928. As soon as the abdomen was opened the omentum was found to be adherent to the abdominal wall over a considerable area. The adhesions were loosened. On the right side, a piece of omentum, 4 cm. square, was

left attached to the abdominal wall, and the parent omentum cut loose. The omentum was also adherent to the pelvic brim on the left side. In loosening it up, two or three loops of the bowel were found adherent in the region of the cæcum. These were loosened and the raw areas turned in. At least five or six loops of small bowel were adherent to one another, which were separated with little or no bleeding. On the right side was an ovarian cyst, at least 8 cm. in diameter, and attached to it was a small cork screw like hæmatosalpinx. The mass was adherent in the pelvis. The adhesions were gradually loosened, and then the sigmoid was found to be adherent to the posterior surface of the cervix. A supravaginal hysterectomy was performed and the left ovary saved.

On histological examination, in addition to the lesions already mentioned, an extensive adenomyoma of the uterus was found. In this case the patient had had a tubal pregnancy seven years before.

CASE 8

Mrs. A. J. B., aged 45, was seen on February 2, 1928. Recently the periods had been excessive, and there had been a dark irritating discharge. On pelvic examination, the body of the uterus was found to be somewhat enlarged, globular, and free from adhesions. Nothing was detected laterally. Operation at the Church Home and Infirmary was performed on February 4, 1928. When the abdomen was opened, the uterus was found to be twice as large as usual, and behind it was some turbid fluid. It was decided to do a supravaginal hysterectomy. As we began to cut across the cervix, a yellowish gray, sloughing, submucous myoma, nearly 4 cm. in diameter was found, projecting down into the cervical canal. This was removed intact, together with the fundus, and then enough of the remaining cervix was removed to take away the cup-like depression in which the submucous myoma had rested. Both ovaries were saved. Three cigarette drains were laid in the pelvis and brought out through the lower angle of the incision. The patient had a very stormy convalescence, but made a good recovery.

From the clinical history, there was not the slightest idea that a submucous, necrotic myoma existed.

CASE 9

On February 7, 1928, Mrs. M. E., aged 38, came to see me. Her periods had been regular until four months previously. She then missed one period, and had some pain in the right lower abdomen, there had been some irregular bleeding. Occupying the lower abdomen, more prominent on the right than on the left side, was a globular mass which felt like a fibroid. One physician who had examined the patient thought she had a tubal pregnancy. In this he was supported by the history. Nearly every one else who examined this patient came to the conclusion that she had a fibroid.

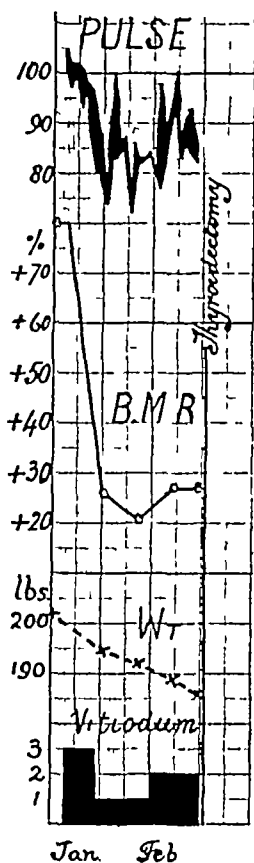
Operation was performed at the Church Home and Infirmary on February 14, 1928. With the patient asleep, a mass could be felt to the right of the uterus. It was impossible to tell just what it was. A midline incision was made and we immediately came down on a dark bluish gray mass, 8 by 5 cm. This was adherent to the descending colon and to the epiploic appendages. It was also adherent to the bladder peritoneum and it lay just beneath the anterior abdominal wall. It was gradually loosened, brought out of the abdomen and found to be a tubal pregnancy which came from the right side. Both ovaries were saved. The left tube was removed because it was blocked. The appendix was considerably enlarged and tied up in adhesions.

In each of these three cases one or more surgeons had diagnosed uterine fibroids, in none of them would the results with radium or x-ray

20th, 1928 She showed the classical symptoms of Graves' disease with the exception that exophthalmos was not present. The disease was apparently of six months' standing. She was placed on vitiodum, three capsules a day, on January 21st. The varying dosage, and the results, are shown in Chart II. There was a rapid, marked fall in the basal metabolic rate, accompanied by marked clinical improvement, including a fall of pulse rate towards normal. Subsequently two capsules a day seemed to hold the basal metabolic rate to just above the normal figure. She was operated on by Dr. Waugh on February 18th, under nitrous oxide. The left and three quarters of the right thyroid gland were removed. She made an uninterrupted recovery, her basal metabolic rate on February 27th was plus 11 per cent, and she was discharged from hospital on March 3rd.

The pathological report on the thyroid states: "Both lobes are of a diffuse fleshy goitre presenting the typical appearance of Graves' disease. The microscopic picture is that of Graves' disease in a quiet period. In places the acini are distended with darkly-staining colloid and lined by flattened cells with a few projecting spurs. In other places the structure is denser, the acini are small and lined by cubical epithelium with scanty thin colloid. Thick dense strands of fibrous tissue run throughout the specimen. There are a few lymph follicles."

CHART II



CASE 3

Mrs. S., aged 43, Anglo-Saxon, housewife. She was admitted to the Winnipeg General Hospital on January 24th. She showed the classical symptoms of Graves' disease, except exophthalmos, and her history indicated that the condition was only of five months' standing. She had been given Lugol's solution, 15 minims three times a day, since the previous November until a fortnight before admission to hospital, when vomiting commenced, on which account she discontinued the treatment, whereupon her symptoms increased in severity.

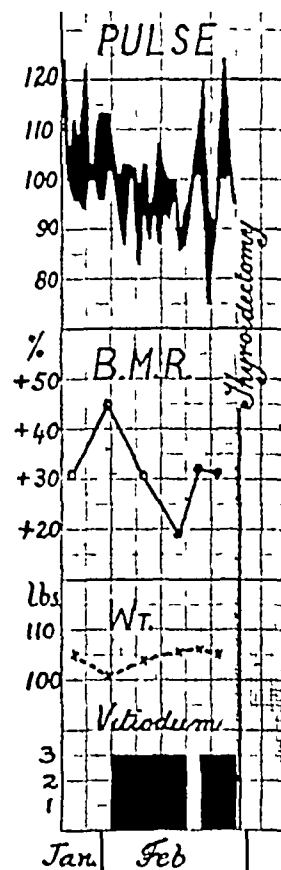
She was kept in bed at rest for several days, without other treatment. At the end of this period her basal metabolic rate had increased from plus 31 to plus 45 per cent, so that the beneficial effect of rest as a complication

in judging the effect of vitiodum treatment can be excluded in this case. She was then placed on three capsules of vitiodum per day, with immediate clinical improvement, and an accompanying fall in the basal metabolic rate. During February 17th to 19th, inclusive, the vitiodum was discontinued, and there was an immediate sharp rise in the basal metabolic rate. The general results are seen in Chart III. She was operated on by Dr. Waugh on February 28th. He resected the left thyroid lobe, a further operation to remove the right lobe being deemed desirable at a later date. On March 12th her basal rate was plus 23 per cent, her recovery was satisfactory, and she was discharged from hospital on March 16th.

The pathological report on the left thyroid lobe states: "One large lobe of a diffuse fleshy goitre presenting the meaty appearance of Graves' disease. The microscopic picture is one of very active hyperplasia, with, in places, evidence of regression shown by the appearance of densely stained colloid and dilated acini. The cells lining these acini are still, however, columnar in type. There are numerous collections of lymphocytes and a few thick bands of fibrous tissue."

Told to report to hospital in a month's time, she did not return until late in June. During the intervening period she had been for some time on Lugol's solution,

CHART III



though this was stopped a fortnight prior to readmission. Her basal metabolic rate on June 25th was plus 53 per cent. She was placed on the iodized fatty acid capsules (three a day). On June 29th the rate was plus 56 and on July 3rd plus 49 per cent. She showed no clinical improvement during this period. Commencing on July 3rd the vitamin capsules (3 a day) were also given, so that she was then getting the complete "vitiodum". On July 6th the rate had only fallen to plus 46, but on the 10th it had dropped to plus 30 per cent, with definite clinical improvement. The body-weight of 109 at admission was unchanged on July 3rd. By the 11th she had gained two pounds.

The second thyroid operation was performed on July 13th, the right thyroid lobe being resected by Dr. M. R. MacCharles. Post operative recovery was normal.

The pathological report on this lobe states "A goitre of moderate size, very firm, and on section presenting a dense meaty appearance. The microscopic picture is one of Graves' disease with marked epithelial hyperplasia, and very little evidence of involution. Many small collections of lymphocytes and some well formed lymph follicles are present."

"The picture is, if anything, a little more active than that of the previous specimen."

CASE 4

S. P., aged 24, Anglo-Saxon, farm-labourer. He was admitted to the Winnipeg General Hospital on March 14th, 1928. During the previous August he had been admitted with typical Graves' disease, and one thyroid lobe was removed. One month prior to readmission the symptoms recurred. On readmission he exhibited all the classical symptoms, with marked exophthalmos. On March 17th the basal metabolic rate was plus 38 per cent. He was placed on three capsules per day of vitiodum on March 22nd, and this dosage was continued daily until May 21st (with the exception of April 3rd and 4th). Tonsillectomy was performed on April 3rd. On April 17th a definite sore throat was observed, and on April 20th Vincent's angina was confirmed. After being placed on vitiodum he showed the usual clinical improvement, the basal metabolic rate on March 30th was plus 12 and on April 9th plus 11 per cent. On April 17th the rate had risen to plus 27 per cent (possibly due to the onset of Vincent's angina), and on May 7th was still plus 25 per cent. On May 21st Dr. Waugh removed the isthmus and the remaining (large nodular) left lobe, except the superior pole. Recovery was uneventful. On June 1st the basal metabolic rate was plus 10 per cent, and the patient was discharged from hospital on June 11th.

The pathological report on the left thyroid lobe states "The gross specimen is that of a large nodular goitre. Microscopically, the picture is that of a completely resting thyroid. The acini, however, are of about normal size, though some are rather dilated, and all are filled with densely staining colloid. The epithelium is quite flattened. There is one collection of interacinar cells which appears to be epithelial in type, but there is no epithelial budding nor other signs of activity."

CASE 5

Mary B., aged 21, Anglo-Saxon, clerk. She was admitted to the Winnipeg General Hospital on March 31st with the classical symptoms of Graves' disease, except exophthalmos. The history suggested that the condition had existed for eighteen months.

She was initially placed on capsules of the vitamin-fraction (3 per day) for four days, but since she developed an acute pharyngitis and temperature, no conclusion could be drawn as to the effect of these. On April 7th three capsules of vitiodum were given, none on the 8th to 10th, inclusive, (the pharyngitis persisting), but the same dose was recommenced on the 11th and continued until her discharge from hospital on the 29th. Her basal metabolic rate was plus 44 per cent, on April 3rd, on April 16th it had fallen to plus 18, with corresponding improvement in clinical symptoms, and on April 24th it was plus 16 per cent. At discharge she was instructed to continue taking two capsules of vitiodum per day, and on May 2nd this dose was increased to three per day. On May 9th the basal metabolic rate was plus 17, on the 23rd plus 14 per cent. On June 4th and 5th no vitiodum was taken, her supply being exhausted. On June 6th her basal metabolic rate was plus 30 per cent. The dosage of vitiodum has been continued until the present time, and throughout this period she has continued to work as a clerk.

On June 13th her basal metabolic rate was plus 24, on June 27th plus 25, on July 17th plus 16 per cent. Her weight at admission to hospital was 141 lbs., by April 16th it had fallen to 131 lbs., then rose steadily to 150 lbs. (June 6th), and remained near this figure, being still 150 lbs. on July 17th.

CASE 6

M., aged 45, Scotch, watchman. He was admitted to the Winnipeg General Hospital on November 25th, 1927, with Graves' disease and auricular fibrillation. Although this case is more complicated than the others it shows distinctly the beneficial effect produced by vitiodum, and this effect, and the salient features of the case, can, perhaps, be most easily seen by reference to Table I.

TABLE I

Data Concerning Case 6			
Date	Treatment		Basal Metabolic Rate
		Body-weight	
		lbs	Per cent
Nov 28		-	Unsuccessful
Nov 30	Lugol's, 15 minims x 3 per day	-	-
Dec 6	Lugol's, 15 x 4 per day	-	-
Dec 19		103 5	+19
Jan 12	Lugol's discontinued	-	-
Jan 13		-	-
Jan 17	Digitalis recommenced	105 5	+39
Jan 26		116 5	+49
Apr 5		119	+50
Apr 9	Vitiodum, 1 capsule per day	-	-
Apr 19		126	+24
Apr 21	Digitalis discontinued	-	-
Apr 27		119	+23
May 4	Digitalis recommenced	-	-
May 7		109	+34
May 9	Vitiodum replaced by cod liver oil	-	-
May 14		110	+37
May 25	Cod liver oil stopped Vitiodum as above recommenced	-	-
May 28		106	+52
May 30	Vitiodum increased to 3 capsules per day	-	-
May 31	Digitalis discontinued	-	-
June 8		110	+ 5
June 9	Vitiodum reduced to 2 capsules per day	-	-
June 15		108	+11
June 22		105 5	+27

89 lbs) on July 12th it was still plus 55, and on July 18th it had fallen to plus 42 per cent, with some slight but nevertheless definite clinical improvement

RESULTS

Cases 2, 4, 5, 7, 8, 10 and 11 were treated with vitiodum (or with the combined fractions of vitiodum) with definite results in all cases, though the response in Case 7 was slight. These cases had not had Lugol's solution prior to the vitiodum.

The few preliminary doses of Lugol's solution given to Case 1 can be disregarded. In this case also the response to vitiodum was excellent, both clinically and as indicated by the basal metabolic rate.

Cases 3, 6 and 12, were given vitiodum after Lugol's solution, but with a sufficient interval between the two treatments. The first two showed a marked, and the third a slight response.

The initial treatment of Case 9 with vitiodum was of too short duration to permit a definite conclusion. Her later treatment with vitiodum immediately following a prolonged course of treatment with Lugol's solution gave no beneficial response.

The results chronicled for Case 3 show that in this case certainly, and in the others probably, the beneficial effect of rest in bed can be disregarded as a dominating factor.

DISCUSSION

The following tentative statements obviously require the support of further evidence.

Discontinuance of vitiodum treatment is followed by a rapid increase in the basal metabolic rate (Cases 1 and 3) which falls again when the vitiodum is again given (Case 1). On the other hand after a prolonged period of dosage the vitiodum may cease to produce an effect (Cases 1 and 4), in this respect resembling Lugol's solution, although after a period without it when it is again given it is again effective (Case 6), in this also resembling Lugol's solution. Whether in certain milder cases it may be possible to treat Graves' disease medically by prolonged administration of vitiodum is still uncertain, although Case 5 suggests that this may be possible. Again in this respect there is a possible parallelism with Lugol's solution.

In each of the cases successfully treated with vitiodum there was noticeable a distinct initial fall of pulse-rate towards normal, persisting from a week to ten days, but then followed by marked fluctuations.

In several of the cases post-operative treatment

included administration of vitiodum, but since in all these cases Lugol's solution was also at that time administered to some extent, no conclusions can be drawn as to the safety or desirability of replacing Lugol's solution entirely by vitiodum subsequent to operation.

We have in this series deliberately excluded cases of the so-called toxic adenoma, since there is still definite difference of opinion as to whether Lugol's solution is without effect on this condition when it is uncomplicated. The frequent occurrence of mixed types of goitre render analysis of the effects of Lugol's solution difficult in such cases. Our results, therefore, though emphasizing the parallelism of the effects of Lugol's solution and of vitiodum, in no way prove that the latter may be without effect on toxic adenomata. Actual test must be applied to settle this point.

None of these cases showed any gastro-intestinal disturbance during or following the administration of vitiodum. Since such disturbance but rarely results from the administration of Lugol's solution, our series is too few in number to permit a definite statement as to an advantage of vitiodum over Lugol's solution in this respect, though it does suggest the desirability of ascertaining the effect of immediate transference to vitiodum of those cases that react badly to Lugol's.

We are indebted to Dr William Boyd, Professor of Pathology at this University and Pathologist of the Winnipeg General Hospital for the pathological reports on the thyroid tissue removed at eight operations on seven of these patients. Since two of the seven (Cases 3 and 4) were complicated by previous administration of Lugol's solution, which may possibly have affected the histological appearance of the gland, Dr Boyd does not think that the series is yet sufficiently extended to justify a definite comparison between the action of vitiodum and of Lugol's solution on the histological picture, though the results at least suggest some degree of likeness.

There are two theories current as to the action of Lugol's solution on the thyroid of Graves-disease, one, that there is a direct action on the gland itself, the other, that there is an indirect action, through the bactericidal action of the iodine solution lessening the amounts of toxic compound (or compounds) absorbed from the alimentary canal, and so lessening the degree of toxic stimulation to the thyroid. It is undesirable to discuss these theories here, though our results may have some bearing on them. But it

is difficult to imagine how a mixture of vitamins A and D and an iodized fatty acid can bring about a result comparable with that produced by a strong active solution of iodine in potassium iodide, although our results show that such is the case. It should, at any rate, be possible to determine whether all the components are necessary to produce the beneficial results, and thus we have attempted to ascertain by using the two fractions separately.

Cases 9 and 10 exhibited no definite clinical response and no definite lowering of the basal metabolic rate when given the vitamin fraction alone, though the first subsequently responded satisfactorily to Lugol's solution, and the second to vitiodum. Case 11 and Case 3 (second period of treatment) showed no response to the iodized fatty acid fraction, though subsequently both responded satisfactorily to vitiodum.

These tests in themselves are insufficient in number, but they do suggest the strong probability that both the vitamin fraction and the iodized fatty acid fraction are necessary for definite effect. It remains to be determined whether both A and D or but one of them is necessary, and whether the iodized secolic acid can be satisfactorily replaced by iodides and other types of iodine compounds. We hope to solve these questions in further work, and also to extend the work in the direction of ascertaining the cause of the effectiveness of this specific combination. It would appear that there is here an example of *positive* vitamin action worthy of careful study, to be contrasted with the *negative* actions usually associated with vitamins in the prevention of certain pathological conditions, but which, of course, do not truly represent their normal physiological functions.

CONCLUSIONS

We draw the following conclusions from this series of cases:

1 Vitiodum, a combination of vitamins A and D and an iodo-fatty acid, is as effective as Lugol's solution when administered in Graves' disease, its beneficial action, and the limits of its beneficial action, closely resembling those of Lugol's solution.

2 Vitiodum has not, in our experience, produced any gastro-intestinal disturbances during or following its administration.

3 It is probable that neither the vitamins nor the iodo-fatty acid alone are effective.

4 It is very desirable that further work be undertaken, not only to have records of a much larger number of cases accurately checked during vitiodum administration, but to investigate as widely as possible the relation between the vitamins concerned and thyroid and iodine metabolism.

We wish to thank the surgeons already named and also Drs Charles Hunter, J. R. Davidson, C. R. Gilmour, F. A. Young, H. M. Murdock and H. D. Kitchen, of the attending staff of Medicine of the Winnipeg General Hospital, for permitting us facilities for the work now reported, and for their co-operation throughout the course of the work.

Our thanks are also due to Messrs Ayerst, McKenna and Harrison for the supplies of vitiodum and its fractions used in the investigation.

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Van Helmont (1577-1644) prophetically expressed the idea of immunity and the cure of disease by immune sera. His words are: "For he who has once recovered from that disease hath not only obtained a pure balsamical blood, whereby for the future he is rendered free from any re-occurrence of the same evil, but also infallibly cures the same affection in his neighbour and by the mysterious power of Magnetism transplants that balsam and conserving quality into the blood of another."

During the year 1927 the death rate from automobile accidents per 100,000 persons exposed was 17.9 in the United States, in Canada it was 10.9. While automobile fatalities in Canada are only rather more than half the proportion in the United States they have been increasing more rapidly of late years.

The figures for the various provinces during 1927 are as follows: Nova Scotia, 8.4, New Brunswick, 19.1, Quebec, 9.6, Ontario, 13.7, Manitoba, 0, Saskatchewan, 0, Alberta, 8.7, British Columbia, 11.1.

THE VALUE OF TRYPARSAMIDE AS A PROVOCATIVE AGENT IN THE DIAGNOSIS OF NEUROSYPHILIS*

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GENNERICH, working with blood, first suggested¹ the use of salvarsan as a provocative agent in 1910. He used small doses of 0.3 and 0.4 grm., doing the blood Wassermann test daily for the succeeding week, as he believed that the reaction in the blood might occur within a few hours of giving the salvarsan, or be delayed for days. His results were such as to convince him that the procedure was of value and aided in the establishment of the diagnosis in many doubtful cases. O'Leary,² in 1920, working with a fairly large series of cases, came to the conclusion that the provocative dose added from 10 to 20 per cent of positive results. Craig,³ in a review of the subject in 1921, states that the use of salvarsan as a routine is fully justified, as the percentage of positive blood Wassermann tests is increased thereby.

The above facts refer to the blood Wassermann test alone and are so generally accepted that practically all syphilologists have for the last fifteen years recognized the value of the provocative dose of salvarsan as an aid in obtaining an accurate blood Wassermann reaction in doubtful cases.

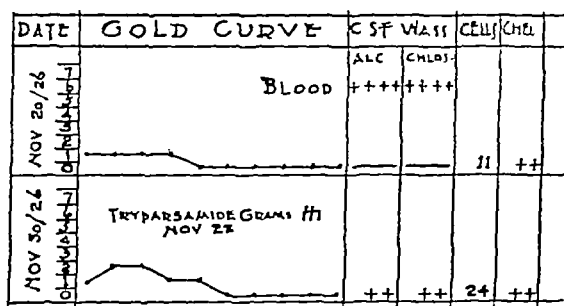
The problem of the neurologist and the psychiatrist is however somewhat different from that of the syphilologist. The psychiatrist may be called in to see a patient suffering from a mental disorder and he may find by a routine blood Wassermann test that the patient has syphilis. He will then have the spinal fluid examined. If this is positive he usually feels justified in treating the case as one of neurosyphilis, even if the accompanying neurological signs and the mental picture are atypical of this disease. If, however, the spinal

fluid is negative after at least two examinations he will have difficulty in making a diagnosis.

In dealing with this precise type of case, namely, cases of mental derangement in which the blood test is positive, the spinal fluid negative, and the neurological and mental picture not very typical of neurosyphilis, we have for the past twenty-one months made use of tryparsamide as a provocative agent, in order to give us more accurate knowledge as to the spinal fluid Wassermann reaction. The purpose of this paper is to report briefly our findings.

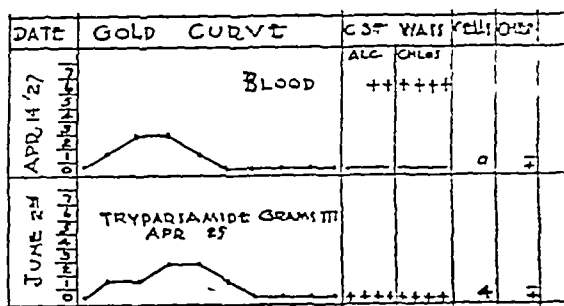
Such cases are not extremely rare, as in a

CHART I



Case No 1—Chart of a very violent disoriented and homicidal patient aged 52 years. Admitted Nov 17 1926. The mental picture was not at all typical of general paresis of the insane but there were suspicious physical signs. After his sixth chill the patient suddenly became very excited and violent and died before a doctor could reach his bedside. An autopsy was refused.

CHART II



Case No 2—A woman 39 years old presenting a typical picture of tabes no mental involvement. She had been treated for years for lues and the tryparsamide was only given to note its effect on the Wassermann test.

* From a clinic at the Verdun Protestant Hospital, under the direction of Dr C. A. Porteous, Medical Superintendent, whose help and advice the writer gratefully acknowledges.

series of thirty-eight patients suffering from neurosyphilis we have had five in whom the spinal Wassermann was negative and one in whom it was doubtful. The other aspects, viz, cells, chemistry, and gold curves varied from negative and suspicious to positive findings.

CHART III

DATE	GOLD CURVE	CSF WASS		CELLS	CHEM
		ALC	CHLOS		
MAR 16/27 0-10-15-20-25-30-35-40-45-50-55-60-65-70-75-80-85-90-95-100	Blood	—	+++		
		—	—	260	++
APR 2/27 0-10-15-20-25-30-35-40-45-50-55-60-65-70-75-80-85-90-95-100	TRYPARSAMIDE GRAMS III MAR 26/27	++	++	230	+++
JUNE 23/27 0-10-15-20-25-30-35-40-45-50-55-60-65-70-75-80-85-90-95-100	MALARIA MAY 1/27			4	

Case No 3—Chart of a patient with no mental symptoms aged 54 years. When seen by us on March 26 1927 he gave a history of being treated intermittently for lues for ten years before and constantly for the past two years. He complained of intense supraorbital pain almost constant incontinence of urine and feces. He was confined to bed. The pupils were equal and reacted to light and accommodation. Right and left Babinsky sign present patellar reflexes very markedly increased marked ankle clonus the abdominal reflexes were absent. The patient gave a history of not being able to wash his face while standing for more than a year. Muscle-sense and touch were very much impaired over both lower extremities. The result of the puncture and blood done that day is shown in the above chart. It will be noted that the neurological picture was not typical of tabes and both it and the spinal serological picture could be explained by some cord lesion other than a luetic one. The result of the provocative dose is shown in the second section the third shows the serological picture after malaria. The physical improvement was just as striking. The man has worked ever since.

CHART IV

DATE	GOLD CURVE	CSF WASS		CELLS	CHEM
		ALC	CHLOS		
MAY 13/27 0-10-15-20-25-30-35-40-45-50-55-60-65-70-75-80-85-90-95-100	Blood	+++			
		—	—	3	+
MAY 19/27 0-10-15-20-25-30-35-40-45-50-55-60-65-70-75-80-85-90-95-100	Blood	+++	+++		
		—	—	4	—
JUNE 7/27 0-10-15-20-25-30-35-40-45-50-55-60-65-70-75-80-85-90-95-100	TRYPARSAMIDE GRAMS III MAY 31/27	+++	+++	17	+++

Case No 4—A woman aged 50 admitted after four weeks in a local hospital. She was reported by them to be negative neurologically and her serological condition as sent with the patient is shown in the upper section. Mentally the woman exhibited a picture of confusion and depression but nothing which would indicate neurosyphilis. We also found her negative neurologically. Our first serological finding is shown in the second section and after tryparsamide in the third. The patient failed so rapidly with us that malaria was not indicated and she died of a three-day intercurrent bronchopneumonia six weeks after admission.

The blood in every case was positive. Hoping to prove or disprove cerebrospinal lues a provocative dose of tryparsamide was given in each of these six cases and we present the serological sheets below.

CHART V

DATE	GOLD CURVE	CSF WASS		CELLS	CHEM
		ALC	CHLOS		
MAR 9/28 0-10-15-20-25-30-35-40-45-50-55-60-65-70-75-80-85-90-95-100	Blood	+++	+++		
		—	+	7	+
MAR 19/28 0-10-15-20-25-30-35-40-45-50-55-60-65-70-75-80-85-90-95-100	TRYPARSAMIDE GRAMS III MARCH 12/28	+	+	17	+

Case No 5—A man 43 years old presented a mild hallucinatory psychosis of a persecutory type. Physical signs were fairly typical and the spinal Wassermann test is shown to be doubtful on the first puncture. In this case we did not get a very striking reaction from tryparsamide but the physical signs were so marked that malaria was given. He apparently became sane during its course but unfortunately was killed in a street car accident ten days after discharge. So we shall never know just how complete his mental recovery was.

CHART VI

DATE	GOLD CURVE	CSF WASS		CELLS	CHEM
		ALC	CHLOS		
APR 12/28 0-10-15-20-25-30-35-40-45-50-55-60-65-70-75-80-85-90-95-100	Blood				
		—	—	32	—
APR 24/28 0-10-15-20-25-30-35-40-45-50-55-60-65-70-75-80-85-90-95-100	TRYPARSAMIDE GRAMS III APR 16/28			18	+
JULY 2/28 0-10-15-20-25-30-35-40-45-50-55-60-65-70-75-80-85-90-95-100	MALARIA IN MAY AND JUNE			7	—

Case No 6—In this case we did not get a positive Wassermann test as a result of tryparsamide. The curve however became positive instead of doubtful. It is also to be noted that the curves of Cases 1, 3, and 4 were also slightly increased. The patient was thirty-six years old a typical tabetic with intense gastric crises and no mental symptoms. The serological finding after malaria is shown. Patient reports that he has gained in weight and is working steadily with no crises.

It will be seen that in five of these we obtained a positive Wassermann reaction following the use of the provocative dose of tryparsamide. In the sixth case we did not, but the curve was strongly increased. It will also be noted that in all these cases, with the exception of the first, the subsequent course of the disease or the concurrent mental and physical findings placed the diagnosis of neurosyphilis practically beyond dispute.

CONTROL CASES

When the idea of using tryparsamide as a provocative agent first occurred to us, we used as controls five cases of dementia præcox, who had been inmates of this institution for periods varying from one to twenty years. These patients all had positive bloods in spite of active treatment with novarsenobenzol and mercury. None of these præcox controls had ever shown physical or mental signs of neurological involvement and their spinal fluids had always remained negative for syphilis. In using them as controls the spinal fluid was first taken and again found to be negative in all reactions. The tryparsamide was given and a week later the spinal serological was again done. The result in every case and in every respect of each test was negative.

During these twenty-one months we have had nineteen patients admitted to us whose blood was found to be positive, but on examination the spinal fluid was negative. In some of these cases the mental and physical picture while not typical of cerebrospinal lues yet had symptoms such as to lead us to believe that neurosyphilis might possibly be the cause of their mental trouble. A routine provocative dose of tryparsamide and a repetition of the spinal tests still showed them to be negative, and up to date the subsequent picture presented by these patients has shown no indication of lues being the cause of their psychosis. In other words, the negative value of this procedure would so far appear to be of equal or greater clinical application than the positive. We are so convinced of this that we now make use of tryparsamide as a provocative agent in every mental patient who comes to us with a positive blood, but a negative spinal fluid. There were also seven patients with a negative blood and spinal fluid whose mental state, and in some cases whose physical condition led us to suspect that possibly lues might still be the cause of their trouble. We applied this procedure in these cases and got no reaction. On the strength of the negative result we excluded lues and so far our confidence in the value of our routine tryparsamide provocative in this type of case has been justified. The subsequent course of every patient of this type has proved that he did not have lues. We do not overlook, however,

that there is still time for some of the more recent cases to develop neurosyphilis.

A reference to the charts will show that the Wassermann reaction is the principal aspect of the spinal serology to be affected. The results on the gold curve, chemistry, and cells are neither uniform nor striking. We have at present a female patient, forty-four years of age, whose mental and neurological picture, while containing one or two features indicative of cerebrospinal syphilis, yet, on the whole was atypical of this disease. Her blood was four plus. The spinal fluid was also four plus, but there was absolutely no deviation from the normal in the gold curve, cells, or chemistry. We pursued our provocative routine with this case. The spinal fluid Wassermann was again four plus, but the gold curve, cells, and chemistry were utterly unaffected.

In this connection we have further to observe that those patients whose spinal Wassermann are ultimately proved to be positive had suspicious findings in either the gold curve, the cells, or the chemical tests. The cases which remained negative in spite of the provocative dose of tryparsamide showed as a rule much less deviation from the normal in these particulars. It further emphasizes the importance of studying as many aspects of the spinal serological examination as possible.

RATIONALE AND TECHNIQUE

Our experience with tryparsamide goes back to May, 1923, when we first began to use it. We have since then given it either with or without malaria to over one hundred and fifty patients. In many of these cases particularly during 1923 and 1924, before we were using malaria in conjunction with it, we frequently noticed an initial exacerbation or the clinical symptoms of the disease after the first or second doses of tryparsamide. Briefly, these were occipital headaches, pain in the back or the neck which extended down the spine, increase of tabetic pains, or a lighting up of these pains where none had been complained of before. It is also generally accepted that tryparsamide does gain entrance to the nervous system; it is, however, a weak arsenical and slow in its effect. The above considerations led us to believe that tryparsamide might be of value as a diagnostic agent if used in a pro-

vocative manner. It also led us to give a maximum dose of 3 grm intravenously and wait a week because of its retarded action before taking the spinal fluid, and that is the technique which we have followed in every case. We were tempted to make a spinal serological examination more often, but the majority of these cases chanced to be private patients and economic considerations had to be taken into account. Also we did not care to submit our patients to more lumbar punctures than were necessary.

The serological work has in all cases been done by Miss Fish, of the Medical Arts Building, Montreal, to whom we acknowledge our indebtedness.

It will occur to every reader that we have only a series of six to report, but it must be remembered that this type of case is not very common and that so far the procedure has been of value in every case. We are quite ready to admit, however, that even six swallows do not make a summer and our next six cases may show the above routine to be less effective.

Our chief reason for publishing this series, small though it be, is that from it tryparsamide, used as a provocative agent in obscure neurosyphilitic cases, seems useful, this also is borne out by the subsequent clinical course in the series. We hope other observers with larger clinics will use it, and assist in adding or re-

jecting the use of this drug in this particular manner, according to their findings in, we hope, much larger numbers of cases.

SUMMARY

1 A moderate number of cases of neurosyphilis, while showing a positive blood Wassermann reaction, will exhibit a negative cerebrospinal Wassermann and atypical physical and mental findings. We have had six such cases in a series of thirty eight.

2 A provocative dose of tryparsamide given to these patients rendered the cerebrospinal fluid Wassermann positive in five cases and in one the gold curve also.

3 We have had other cases in which the picture presented by the blood and spinal fluid Wassermann was similar to these six. In some the mental and physical symptoms were such as to lead us to suspect neurosyphilis. A provocative dose of tryparsamide given to these cases showed no effect on the spinal fluid and the subsequent history of these patients showed that syphilis had not invaded their nervous system.

4 Cases of cerebrospinal lues with negative spinal fluid Wassermann tests usually show suspicious findings in the cells, gold curve, or chemical reactions.

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Fissures of Nose—Richard L. Sutton describes lesions which occur at the anterior angle of the opening of the nose, and, while scarcely perceptible to the eye of the examiner, are very persistent, and give rise to considerable pain and discomfort. Not infrequently there is a secondary streptococcal involvement, which may cause slight fever and some intermittent redness of the tip of the organ. Dryness of the nasal mucosa and rosacea probably are provocative factors, but why the condition is almost wholly limited, at least in his experience, to middle-aged women, he does not know. The most effective agent is a needle-pointed electric cautery. With this modern "microbrenner" the raw surface, previously put on the stretch by means of a nasal speculum, is carefully "ironed" out. Afterward, a dressing of ointment of yellow mercuric oxide (2 per cent) is applied. As a rule, relief is prompt and permanent.—*J Am M Ass*, 1928, xci, 567

I think that if we were to search for one short phrase to characterize the difference between the newer physics and that of past times, I should choose the following: *The world is not composed of "things"*. To the metaphysician this is no new idea, but in the past the metaphysician could not point to the technique of science as being on his side, and he was therefore unable to combat the popular metaphysics which survived contentedly alongside of his speculations. Nowadays, physicists, the most hard-headed of mankind, the people associated more than any others with the intellectual and mechanical triumphs that distinguish our epoch, have embodied in their technique this insubstantiality which some of the metaphysicians have so long urged in vain. "We are such stuff as dreams are made on" was once a piece of poetic imagination, now it is among the presuppositions of physics.—Bertrand Russell, *Saturday Review of Literature*

THE COMPLEMENT FIXATION TEST IN SCARLET FEVER AND ITS IMPORTANCE IN CARRIERS*

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FOR a long time the etiology of scarlet fever has been the subject of discussion and researches among various schools. Although Heubner¹⁴ and his followers are of the opinion that the streptococcus plays only a secondary part in the infection, yet the consistent bacteriological findings of Raskin,²³ Ranke,²² Baginsky and Sommerfeld,¹ Rumpel,²⁴ and Jochmann,¹⁶ who was able to isolate the *S. hæmolyticus* directly from the blood of scarlet fever patients on an average of 15 per cent of the cases and in 70 per cent of post-mortem examinations, have thrown considerable light on the subject.

The isolation by Dochez and Bliss⁷ of a certain strain of *S. hæmolyticus* from the throat of patients with scarlet fever in 100 per cent of case, the local reaction with a consecutive immunity against the disease obtained by injection of filtrates prepared with a specific *S. hæmolyticus* by the Dicks⁸, the blanching phenomenon in scarlet fever obtained by Schultz and Charlton²⁶ by injecting patients with the serum of convalescents from the disease, and the particular behaviour of the blood of scarlet fever patients in regard to the opsonic index of a certain strain of streptococcus as found by Tunnicliff²⁰, seem sufficient evidence, as Cushing⁵ says, that a certain specific strain of *S. hæmolyticus* must be considered as the etiological factor of scarlet fever. Although, of late, some authors, as Mandelbaum,²⁰ seem to have isolated a scarlet fever bacillus, yet the further study of classification of a particular strain of *S. hæmolyticus* by means of the precipitin reaction with absorbed serum (Lancefield¹⁵), and the studies of Szirmai,²⁷ Gerbasí,¹² Blake³ and many others, seem still further to substantiate the theory of a specific *S. hæmolyticus* infection.

That on the other hand the scarlet fever

complex is not an anaphylactic production, as claimed by Szontagh,²³ Fanconi⁹ and Meyer,²¹ in the sense that the human organism, sensitized by a repeated simple streptococcal infection, would react anaphylactically to a new streptococcal invasion and would produce the scarlet fever symptomatology, seems to be an unfounded conclusion. According to Deicher, scarlet fever is not an anaphylactic shock, but a new infection altogether, and that this is so is proved by the fact that scarlet fever is cured by specific anti-streptococcal serum, which would not be possible in the case of anaphylaxis. And, moreover, the fact that children can build antibodies against the streptococci as well as adults does not explain why the former should be more susceptible to scarlet fever than the latter. Furthermore, according to epidemiological researches, susceptibility to scarlet fever diminishes as age increases, which, according to the anaphylactic theory, seems in reality to be just the opposite.

As Deicher⁶ says "In America, England, Hungary, France, Russia, Germany and Austria they are of the opinion that the *streptococcus hæmolyticus scarlatinae* must be taken as the causative agent of scarlet fever. We believe that the well known general success of the therapy of scarlet fever with artificial immune sera—prepared exclusively from streptococci or their toxins—represents a further striking evidence for the streptococcal etiology of scarlet fever."

The difficulties encountered by researchers in trying to fix the responsibility of this infection on one particular agent, through the fields of bacteriology and immunology, did not deter them from attempting to solve this problem by the complement fixation test.

The first authors to study scarlet fever by this test were Besredka and Dopter,² Fournier and Mallein,¹⁰ and Schleissner.²⁵ The first two authors used antigens prepared from streptococci cultured directly from the throat of

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This research was undertaken at the suggestion of Dr. A. Mackenzie Forbes, Chief Surgeon, after an epidemic of scarlet fever had retarded the work of this hospital during the winter of 1928.

scarlet fever patients and from the heart blood obtained from post-mortem cases. In seven cases of scarlet fever, convalescent between the 7th and 33rd day, they obtained no fixation of the complement. These negative results convinced the authors that the streptococci were to be regarded only as secondary invaders in the disease.

Foix and Mallein used an antigen made up of nine strains of streptococci obtained from cases of scarlatinal angina. They tried the complement fixation in cases of scarlet fever in various stages of the disease, and also in cases of erysipelas and puerperal sepsis. They examined 12 scarlet fever patients between the 4th and 30th day of infection and concluded that the serum of scarlet fever patients contains antibodies against the streptococcus, antibodies which were put in evidence by the complement fixation 10 times out of 12. These antibodies were quickly formed and could already be detected after the 4th day of the disease, they lasted a long time and could still be found on the 38th day and possibly even later than this. The reaction failed in other streptococcal infections.

Schleissner,²⁵ in 1909, having prepared an antigen from streptococci isolated from the blood of patients with scarlet fever, had occasion to study this reaction in a large number of cases. Of 13 cases between the 1st and 6th day, 6 gave a positive fixation, of 25 cases between the 7th and 35th day, 19 were positive, of 4 cases after the 35th day, only one gave a positive reaction. Numerous control sera used were always negative. In 32 cases, in which this author employed antigens prepared from streptococci isolated from other acute infections, like erysipelas, the results were invariably negative, although he obtained a weak fixation with the sera of patients of puerperal sepsis and of panophthalmia. This author is of the opinion that the constant presence of streptococcal antibodies in scarlet fever patients, as revealed by this biological reaction, speaks for the reliability of the test. He also states that these antibodies are present without exception between the 2nd and 5th weeks of the disease, are scarce or nil in the 1st week, and disappear from the blood by the end of the 6th week. These antibodies seem to be at their height in the blood of the patients on

the 10th day of the disease. He, however, does not think that the complement fixation is a sure method of differentiating the various species of streptococci.

Schleissner's results were soon confirmed by Livierato¹⁹ who, having studied 18 cases with various antigens of *S. pyogenes*, *Staph. aureus*, *Staph. albus*, diplococcus of Frankel, *B. typhosus*, *B. influenza*, *B. coli* and *M. tetragenus*, obtained in all cases a fixation only with the streptococcus antigen, the results being negative with all the others.

Cantacuzene and Bonciu⁴ only recently studied the relation between the *S. haemolyticus* and scarlet fever convalescents by means of this reaction. As antigens, they used the toxin of Dick, a suspension of *S. haemolyticus* isolated from scarlet fever patients, one prepared from the *S. erysipelatis*, and also an indifferent antigen that of Bordet and Ruelens as employed in lues. These authors studied 150 cases of scarlet fever in the various stages of the disease. Of 32 cases in the first 15 days of illness, 4 sera fixed the complement with the Dick toxin as antigen, of these 4 sera, 2 showed also a retarded hemolysis with the suspension of the *S. haemolyticus* cultured from scarlet fever patients and also with the Bordet and Ruelens' antigen. Of 118 bloods taken between the 30th and 40th day of the disease, only 19 were positive with the Dick toxin. Of the 19 sera, 3 gave also a very strong reaction with the suspension of *S. haemolyticus* and with the Bordet and Ruelens' antigen. Of these 19 patients, 12 had received antistreptococcal serum during the disease. The authors concluded that in 16 per cent of scarlet fever cases one may get a positive complement fixation by using the Dick toxin as antigen. They regard the complement fixation reaction as not specific, having always obtained negative results with the immune sera of horses vaccinated with the Dick toxin.

It is remarkable that the above-mentioned investigators, although all using antigens prepared from cultures of streptococci isolated from the blood stream or from the throat of scarlet fever patients, have obtained such varying results, Livierato, 100 per cent, Foix and Mallein, 83.4 per cent, Schleissner, 61.88 per cent, Cantacuzene and Bonciu, 16 per cent.

INVESTIGATIONS IN THE SHRINERS' HOSPITAL, MONTREAL

In this hospital, some time after the abatement of an epidemic which occurred during the past year, six fresh cases of scarlet fever developed among both children and nurses, with exceptionally long intervals between them, and when for a long period there had been no fresh admissions to the wards. Strict orders had been enforced to prevent contact with the outside and especially with visitors to the patients, and yet cases of scarlet fever continued to make their appearance. The efforts in this direction having proved futile, at the suggestion of Dr. Forbes I tried to ascertain the source of infection by performing the complement fixation test on a selected number of patients and I was particularly requested to examine the blood of a certain woman attendant who had suffered from time to time with a severe sore throat (but who had not had scarlet fever). To this effect, I undertook this research, first, to see if the complement fixation test were at all practical and, if so, to estimate its value in detecting carriers.

I worked with several antigens

1 One prepared from strains of *S. hæmolyticus* (Dick) isolated from scarlet fever (American Type Culture Collection, Chicago)

2 Another prepared from *S. hæmolyticus* (Loewe)

3 *S. pyogenes* isolated from cases of puerperal sepsis, *S. hæmolyticus* isolated from cases of septicæmia, and the polyvalent streptococcus vaccine Sherman No. 42

4 An antigen represented by the scarlet fever streptococcus antitoxin of Parke, Davis and Co. (Detroit)

5 The antistreptococcus serum (Lederle)

Strange to note is the fact that these two last mentioned antitoxins (Nos. 4 and 5) behaved in a manner similar to true antigens. The explanation of this cannot for the present be accounted for.

After the titration of each antigen, one half of its anticomplementary dose was used. The antigens which proved to be the best and most suitable were the first two mentioned. The amount of serum of the patient used was 0.2 c.c. All sera examined were obtained from patients not treated with specific antiserum.

The results obtained were the following

Of 18 cases of scarlet fever between the 1st and 7th day, 4 were positive

Of 14 cases between the 7th and 14th day, all were positive

Of 2 cases between the 21st and 28th day, 1 was positive

Of 3 cases between the 28th and 35th day, 1 was positive

The serum of the suspected carrier was strongly positive

With 150 sera of various diseases examined as controls and using the same antigens, the results were always negative

So that of 41 cases of scarlet fever examined, a total of 23 positive reactions were obtained, or an average of 57.5 per cent, in all stages of the disease

When it was found that the serum of the suspected carrier referred to above gave a strong complement fixation with all the antigens, while all others of this hospital gave uniformly negative results, the hospital authorities decided to keep the suspected person away from the establishment. Whether this particular case was the cause of these scarlet fever cases may be judged by the fact that since the dismissal of this attendant no more cases of scarlet fever have been reported.

From a glance at the results obtained with the complement fixation test by the various workers, excepting the conflicting ones of Besiedka and Dopfer (10 per cent) and those of Livierato (100 per cent) one may well note a few important points. The complement fixation test, using a polyvalent antigen of *S. hæmolyticus*, has a tendency to be negative in the first week of the disease. This seems also to agree with the findings of Jochmann, (as I had occasion to see personally when working with him), who never succeeded in isolating the streptococcus from the circulating blood of these patients in the 1st or 2nd day of the disease even in the so-called fulminating cases. Apparently not sufficient antibodies are yet formed at that stage. The test gives the highest percentage of positive results between the 2nd and 5th week of the disease. The test has a marked tendency to become negative again after the 6th week. These results were obtained, as previously stated, in cases not treated with specific serum therapy.

A positive complement fixation in patients treated with specific serum is naturally difficult to interpret and the time at which a complete disappearance of these artificially produced antibodies from the circulation will take place is, as this test shows also in other diseases, like gonorrhœa, very difficult to fix. In my opinion, this is of much less importance than in other diseases, the focus of infection—throat and tonsils—being more accessible to treatment and to bacteriological examination. But as the streptococcal serum is as a rule given in the first or second week of the disease when the most severe complications are more likely to take place and as the naturally formed antibodies are mostly eliminated by the sixth week, also the artificially produced ones would as a rule be more or less eliminated by that time. In my opinion also, patients convalescent from scarlet fever with a negative bacteriological throat examination and a negative complement fixation could be safely discharged, while those with a negative bacteriological examination but a positive complement fixation should be regarded with suspicion and kept isolated for a longer period.

PERIOD OF INFECTIVITY

The time at which convalescence of scarlet fever patients begins, according to the majority of authors, is with the apyretic state of the patient and it is also at this time or later (3rd or 4th week of convalescence) that desquamation begins. The patient, in non-complicated cases, is discharged as a rule at the end of the 6th week from the beginning of convalescence. With regard to this routine, of late, the opinions of some clinics and laboratories seem to differ.

Helbig¹⁰ maintains that above all things the prophylaxis against a new infection of the mucosæ among the convalescents of scarlet fever in the hospital is very important for a continuation of isolation. The demand of other authors— isolation longer than 6 weeks—he maintains is not applicable. How long the non-complicated cases of scarlet fever can be infectious is not yet ascertained, according to him. "In those cases with septic complications, the necessity of a prolonged isolation is well known."

Friedmann and Decher¹¹ say "As source of transmission of scarlet fever, practically only the streptococci present in the throat of patients and in the septic complications of

scarlet fever have to be taken into consideration, skin desquamations and urine do not contain streptococci and are consequently not infectious. But the scarlet fever streptococci are found in large quantities all over the surroundings of the patients. In 100 per cent of the patients kept in hospital after 6 weeks and sent home as convalescent, scarlet fever streptococci were found on the tonsils. The construction of convalescent stations is for this purpose an indispensable necessity. The hemolytic streptococci of scarlet fever forming the toxin are capable of a metamorphosis into atoxic green streptococci which can again transform themselves into typical scarlet fever streptococci."

The bacteriological findings seem to be unanimous in condemning this arbitrary 6 weeks' convalescence, and moreover there seems to be evidence in the literature that contact with such convalescents has given rise to fresh cases of scarlet fever, as mentioned by Kirkbride and Wheeler,¹² who conclude "Hemolytic streptococci producing potent toxins have been isolated from patients after recovery from typical scarlet fever, from 30 days to 6 months after the onset of the disease. Evidence has been obtained that occasionally typical cases of scarlet fever may occur as a result of contact with such convalescent carriers or with normal carriers." And Decher says "We emphasize the claim that, as a principle on discharging convalescents from fever, the principal point should not be a schematic 6 weeks' isolation, but 3 consecutive examinations from that time showing that the mouth of the patient is free from *S. hemolyticus*."

This contagious disease which, in Montreal, occupies third place, with measles first and tuberculosis second, according to the *Health Bulletin*,¹³ averages 150 or more cases per month. In all probability, this number could be greatly reduced if the health authorities, besides imposing a compulsory and repeated bacteriological examination of the throat after the 6 weeks' convalescence, would exact also the same routine examination on all contacts together with a complement fixation test in those cases where there was a suspicion of possible carriers.

CONCLUSIONS

The complement fixation test for scarlet fever,

in the limited number of cases examined shows that

1 A negative result is the rule in the 1st week of the disease and also after the 6th week of convalescence

2 A positive fixation is obtained always between the 2nd and 5th week of the disease

3 A positive fixation obtained after a 6 weeks' convalescence and in apparently healthy persons but with a throat infection bespeaks an active infection warranting the isolation of such persons as carriers

4. The uniform results obtained with antigens prepared from the *S. hæmolyticus* seem to further confirm the theory of its being the etiological causative agent of scarlet fever

I wish to extend my thanks to Doctors A. Mackenzie Forbes, L. J. Rhea, H. B. Cushing and A. H. Mac Cordick of the Shriners' and Alexandra Hospitals for the valuable assistance which they have afforded me in the way of facilities for carrying out this research

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STATISTICS AND THE MORTALITY RATE FROM DIABETES

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IN the introductory chapter of "Medical Biometry and Statistics," Professor Raymond Pearl¹ repeats the following quotation of Dr Lawrason Brown

"None of you will contradict me when I say that statistics are very dry, but some of you may dispute with me when I say that only by statistics does the world, lay or medical, advance. Consider what knowledge is and you will see how inseparable it is from statistics. Medicine is no exact science, and diagnosis rests largely upon the law of probability which, in turn, is statistical. All scientific experiments are statistical arguments in favour of, or in opposition to, certain inductions or deductions. Further, statistics lend the authority that is necessary for their acceptance.

"The trouble in medicine does not lie with the statistical method, but with the medical men who do not know how to use it. I regret to state that I belong to this class, and have felt keenly that in medical school I did not have an opportunity to attend a course on medical statistics. The day will come, gentlemen, when such courses will be given, when the law of probability will help in diagnosis when the coefficient of correlation now explained by most authorities in such terms that in a few minutes my idea of my relation to my surroundings has become totally insufficient—when, I say, all these things will be understood by the medical graduate. At that time medical men will cease to do such foolish things with statistics as to try to add cabbages and cows

or, what is nearly as bad, to try to solve problems in heredity by finding how many parents had the disease from which the offspring suffers, without due respect to many other very important and possibly contradictory details. What would you think of a bookkeeper who, after years of personal experience, would gather up the bills in the cash drawer and go to the bank with the statement that his personal experience led him to believe that the roll of bills amounts to \$1,000? The receiving teller would quickly apply the statistical method and few would venture to side with the bookkeeper, no matter how large his experience had been."

I have been prompted to extract this quotation on reading an article recently contributed by Dr Henry J John on "A statistical study of 2,000 diabetics"² In this paper Dr John records mortalities amongst his 2,000 patients which, from the point of view of the diabetic, are, to say the least, disturbing. In view of these findings I have considered it advisable to make a careful analysis of the data supplied. Comments upon the results of this analysis form the subject matter of this communication.

A brief reference may first be made to a recent communication in this *Journal*³ in which I demonstrated the effects of modern treatment upon the mortality rate from diabetes mellitus. It was shown that in a large population of properly treated diabetics, the mortality rate now approximates the normal population death rate. The demonstration was statistical. The significance of mortality rates was also discussed. The possible fallacies of the use of "crude" death rates and "personal experience," and the importance of expressing mortality rates as ratios of "actual to expected" deaths was shown.

Turning now to Dr John's paper, we find the statement made (p 217) that the study covers the period from March, 1921, to November, 1927, and later on (p 244) it is stated that of the 2,000 patients observed during that time (seven years), 131 died. That is, there was a crude mortality rate of 6.55 per cent. Since this represented a crude rate, it was expected that somewhere in the body of the paper consideration would be given to the factors essential for the proper interpretation of this rate, namely, (a) a division of the cases into

groups of those observed in the pre-insulin days and those since the discovery of insulin, and, (b) calculations of ratios of actual to expected deaths. It is general knowledge that the results of treatment in the days prior to the use of insulin differ markedly from those of the present day. No such division of cases was made, however, neither was an attempt made to correlate the actual deaths with the number of those expected. As a matter of fact, not only was the latter operation not performed, but "EXPECTED" deaths seemed to be of little significance to the author. This may be concluded from the following:

On page 244, it is stated that "while the total mortality is 6.55 per cent, if the deaths in the seventh, eighth and ninth decades were excluded, *because of the natural incidence of death in these periods,*" (the italics are mine) "the mortality incidence would drop to 4.4 per cent."

Such a procedure can only be the result of disregarding recognized statistical methods. The assumption here is that the natural incidence of death has little significance, and also that there is no natural incidence of death at different periods of life. As a matter of fact, not only experience, but a glance at any of the existing "Life Tables" shows there is an expected death rate for every age. This, as is well known, should be taken into consideration in the interpretation of mortality rates. When this was done by the writer with Dr John's data, the conclusions drawn were found to be just the reverse of those recorded. This will presently be shown by a reassessment and recalculation of the data given.

On page 218 (Table I) will be found Dr John's classification of his cases, according to age and sex. I have taken the figures representing the total populations, according to the different decades, and calculated the expected number of deaths for each, with the following results:

	Popula tion*	Actual deaths†	Expected deaths	Actual Expected
Second	53	8	0.33337	24.2
Third	115	7	0.79235	8.8
Fourth	242	7	2.02554	3.4
Fifth	463	16	5.55600	2.8
Sixth	553	45	11.51899	3.9
Seventh	528	34	22.28688	1.5
Eighth	14	8	1.29738	6.1

* Taken from Table I, Dr John's records, page 218

† Taken from Table XIII, Dr John's records, page 245

Unfortunately, in calculating the above ratios of actual to expected deaths, the results are only approximate. This must necessarily be so, since Dr. John has grouped the population by decades. More exact values could have been obtained had all of the patients been classified according to their ages when first observed. For the same reason I have omitted calculations for the first decade. A glance at any "Life Table" will show the marked variation in the number of expected deaths of each age interval during this decade. Thus, (from Glover's Table II) —

Age	Deaths per 1000 living (1900 ax)
0-1	114.62
1-2	27.62
2-3	12.34
3-4	7.83
4-5	5.65
5-6	4.66
6-7	3.91
7-8	3.30
8-9	2.82
9-10	2.47

On the other hand, in the later decades, the variations in the death rates are gradual. As a matter of fact, if the death rate (factor α_x) corresponding to the middle age of each decade is made use of, though the results are by no means exact, they are sufficiently accurate for the present purpose.

Let us now compare the results of the above calculations with the statements made in Dr. John's paper.

(a) On page 244 the statement is made that "the seventh decade shows a high incidence of mortality, as does the fifth decade." As a matter of fact, the seventh and fifth decades show the lowest ratios.

(b) The statement is made on the same page that "the heaviest mortality is in the sixth decade." It will be observed that the highest ratio of actual to expected deaths is in the second decade and the ratio of the sixth decade is amongst the lowest.

(c) For the same reasons, the conclusion on page 247 that "the corrected mortality was 6.4 per cent" amongst the surgical group of cases is erroneous.

In a previous paper,⁴ Dr. John reported the results of a study of 1,000 cases. The investigation covered the period of March, 1921, to August, 1925. Since the second paper includes all cases, it was thought that some additional

information would be obtained if the data of both papers were reassorted. Thus, since the first 1,000 cases include all those to August, 1925, the second 1,000 patients must have been observed from August, 1925, to November, 1927. In other words, though the first group of cases were influenced by treatment of pre-insulin days, the second group belong to insulin days only. My attempt to make some such re-assortment failed, however, because the data supplied were insufficient, for although Dr. John records the deaths corresponding to the different decades in the second paper, which includes all of the 2,000 cases, no corresponding data are given in the first paper. The only available information in that paper is the total number of deaths amongst the 1,000 cases and the classification of patients, but not deaths, according to decades. Although it is, therefore, impossible to compare the ratios decade by decade, it is possible to approximately determine the ratios of actual to expected deaths of the two groups as a whole and compare them. This I have done, with the following results.

Since the number of deaths recorded amongst the first 1,000 diabetics was 62 (Table XVII, page 87, first paper) and, since the total number of deaths for the whole group was 131, there must have been 69 deaths amongst the second groups of patients. In Table I of the second paper are shown the populations of the two different series by decades. It is, therefore, possible to calculate the ratio of expected deaths for the two groups as a whole. From these calculations it may readily be observed that the ratio of actual to expected deaths amongst the first 1,000 cases was 2.6 and the ratio for the second 1,000 was 3.10. The conclusion to be drawn from these two figures, is as obvious as it is erroneous. The conclusion would be that in the Cleveland clinic, the mortality rate since insulin was greater than before insulin. I am certain Dr. John would not care to admit that. His clinic is modern and his results since insulin are as satisfactory as may be found in any other well established clinic. The death rate must, therefore, have been lower since insulin. This is suggested not only from various statements made by Dr. John, but also from the satisfactory results amongst his group of surgical cases, as shown in Table II of his second paper. The deduction, therefore, is that since

the results are more satisfactory and the mortality rates are lower, the mortalities given by Dr John must be the result of defective methods of analysis and not the fault of treatment.

Among the conclusions is found the statement (page 247) that "the general belief among the laity that insulin once used must always be continued is shown to be fallacious." Here, again, an analysis of the data shows a faulty basis for this statement, for the following reasons:

No further proof, clinical or experimental, is necessary to show that all diabetics are not alike but that there are different types. For example, there is the juvenile diabetes, the acute diabetes of adults, the mild chronic progressive type whose tolerance is lowered by infection, the non-complicated chronic progressive type, the "gall bladder" diabetic, etc. In each of these groups, as is well known, the progress is different, the reaction to diet is different and the reaction to insulin treatment is different. Insulin dosages, as we know, are also influenced by other factors, such as exercise, etc. The effect of many of these factors in influencing insulin dosages were studied by the writer.⁵ Dr John, according to his data, made no classification of his cases, nor did he determine whether insulin was at all necessary. Proof of this is found in the body of the paper, on page 222, where the statement is made "It is my practice to administer insulin to every patient when he first comes to the hospital." Such treatment, though it may shorten the period of stay of patients in hospital, as Dr John suggests, can certainly not form the basis of the statistical conclusion which he recorded, since, with this practice, one may find hundreds of diabetics who, having been given insulin for short periods of time, are able to discontinue the use of it. Two questions which arise here are, (a) Was carbohydrate tolerance improved by the use of insulin?

(b) Was insulin actually required? That so many of Dr John's patients discontinued the use of insulin after periods of two, three or more days' treatment, since the majority of periods represent days and not weeks or months (see Table II of first paper and Tables V, VI and VII of second paper), very strongly suggests that none was required to start with, though it may have been good practice in order to reduce hospital days.

These are a few of the observations which may be made apropos of the paper referred to. The conclusion is that no evidence is offered which tends to disturb the hopeful outlook of the diabetic. The mortalities recorded by Dr John, which were disturbing before they were analyzed in detail, are, on examination, shown to be not real, but the result of his method of analysis.

The reason for publishing my observations is to call attention to the importance of statistical accuracy. Unfortunately, it is the rule, rather than the exception, that, in modern medical literature, one finds what purport to be statistical reports, but which, in reality, are nothing more than a mass of meaningless and therefore useless, data. In order to avoid unnecessary additions to the ever increasing literature of medicine, statistical reports should be regarded as justifiable only when they are exact and useful. The present state of affairs is still more deplorable, since such errors occur so frequently in the better type of journals, and are made by the better writers who, otherwise, are authorities in their respective subjects.

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"When your dressings have been carefully applied, do not interfere with them for some days, keep the air out, for a wound left in contact with air suppurates. However, should pain and heat arise, open and wash out again, or even a poultice may be necessary, but do not pull your dressings about, nature works better left alone. Beware that your needles are clean, or they will

infect the wound. Do not allow the wound to bleed. For oozing use styptics, for jets of blood the cautery, but the disadvantage is that when the eschar falls off, bleeding may recur. Digital compression for an hour is useful, and neupressure for large vessels, or if the vessel can be isolated let it be drawn out, twisted and ligatured."—Henri de Mondeville (1260-1320)

ON THE OCCURRENCE OF BLOOD DYSCRASIAS FOLLOWING THE ADMINISTRATION OF NEOARSPHENAMINE*

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WITHIN the last decade medical literature has contained from time to time contributions describing reactions with unusual blood-pictures following the use of arsenical preparations in the treatment of syphilis. Leredde¹ and Labbé and Langlois² were the first to report in 1919 the appearance of such blood dyscrasias. The rarity of these conditions and, at times, the severity of their course are the prime reasons for the publication of this case.

The patient, a negress, aged 26 years, was admitted into the Montreal General Hospital on April 2, 1927. Her complaints were those characteristic of cardiac decompensation. The final diagnosis was that of aortitis luetica with aortic insufficiency. Before her entrance to the hospital her family physician had had a serological examination made, the report from the blood Wassermann test was strongly positive (3 plus). Subsequently the patient was given two intravenous injections of neoarsphenamine, 0.45 gm each, at weekly intervals, and one intramuscular injection of mercury salicylate, grain 1. The only other physical finding of interest on admission was that of a barely palpable spleen. The red blood cells were 4,800,000 per c.mm., the white blood cells 8,400 per c.mm., and the haemoglobin 72 per cent (Dare). The blood Wassermann was strongly positive (3 plus) on two occasions while in hospital. Under rest in bed and courses of digitalis compensation was soon established. Six intravenous injections of neoarsphenamine, 0.45 gm each, were given at weekly intervals without untoward effect. In addition, potassium iodide, in daily doses of 40 to 60 grains, was given by the mouth. The patient was then discharged to the Out Patient Department of the hospital where antiluetic treatment was continued. From June 6th until October 11th, the patient received seven intravenous injections of neoarsphenamine in increasing dosage from 0.45 to 0.6 grains. Intramuscular injections of mercury salicylate were given on weeks that neoarsphenamine was not administered. It was noteworthy that after the last injection, a papular rash was observed on the lower extremities. On November 22nd the blood Wassermann was still strongly positive, but a rest from treatment was decided upon.

The patient was not under observation again until April 3, 1928, when she reported to the Out Patient Department with symptoms and signs of cardiac decompensation. A slight icteroid tinge to the conjunctivae was also found. The patient was re-admitted to the ward on April 11th. The cardiac condition was essentially the same as on the previous admission. On this occasion both liver and spleen were readily palpable. A positive indirect van den Bergh test was also reported. On April 12th a catheter specimen revealed a specific

gravity of 1013 and some albumen (one plus), occasional pus and epithelial cells, but no red blood cells. The blood Wassermann was once more strongly positive. On April 13th the red blood cells numbered 4,800,000, white blood cells, 6,000, and the haemoglobin was 95 per cent (Hellge). On April 23rd the patient was given intravenously 0.3 gm of neoarsphenamine. One hour afterwards profuse oozing from the gums and less severe epistaxis occurred and continued till the morning of April 25th. A mild hæmaturia also existed. The blood loss was estimated at about 1,000 c.c. On April 24th the bleeding time was 12 minutes (Duke's method). The coagulation time was 6 minutes (Lee and White's method). There was no retraction of the clot at the end of one hour. The platelet count was 60,000 per c.mm. The presence of purpuric lesions on the skin could not be determined on account of melanism. No petechiæ were noted on the mucous membranes of the mouth. The hæmatologist, Dr. E. S. Mills, considered the hæmorrhagic condition as a toxic purpura. Local applications of adrenalin, special dental plates to apply pressure to the gums, and 0.3 gm of sodium thio sulphate intravenously were prescribed to control bleeding. No other symptoms were present. On May 16th, the red blood cell count was 3,000,000, white blood cells were 7,600, and the haemoglobin 57 per cent (Hellge).

On May 16th, twenty-two days after the last injection, 0.15 gm of neoarsphenamine were given to the patient intravenously. Two hours later oozing from the gums and epistaxis reappeared. A catheter specimen of urine showed red blood cells. The stool was faintly positive for blood, but possibly this resulted from the swallowing of blood. The menstrual period was present at the time and this was more profuse than usual. No retinal hæmorrhages were discovered. Local applications to the gums and nose were employed in the form of a tannic and gallic acid mixture and adrenalin. That night 0.3 gm of sodium thio sulphate were injected intravenously. The following morning the oozing had ceased. The red blood cell count was then 3,800,000, the white blood cells were 5,200, and the haemoglobin 63 per cent. The differential count showed 42 per cent polymorphonuclears of the neutrophilic type, 41 per cent small lymphocytes, 5 per cent large lymphocytes, 9 per cent monocytes, 1 per cent of eosinophils, basophiles and myelocytes respectively. The bleeding time was 10 minutes and the platelets numbered 15,000 per c.mm. The blood calcium was reported as 12.7 mgm per 100 cc of serum. On May 31st the blood findings were as follows: red blood cells 3,000,000, white blood cells, 7,100, haemoglobin 75 per cent, neutrophilic polymorphs 47 per cent, small lymphocytes 42 per cent, large lymphocytes and monocytes, 1 per cent, basket cells, 4 per cent, myelocytes 1 per cent, eosinophiles 2 per cent, platelets 370,000, bleeding time, 12 minutes.

SUMMARY

Summarizing, the above patient developed in the course of antiluetic treatment with neoarsphenamine a hæmorrhagic diathesis with bleeding from the gums, epistaxis and hæmaturia. There was no antecedent history of a similar character in either family or personal history. Of particular interest were the blood

* From the Clinic of Dr. C. P. Howard, Montreal General Hospital.

findings, a much reduced platelet count, a prolongation of the bleeding time and non retractility of the clot. With cessation of bleeding there was a rapid return to normal of the blood platelets and bleeding time. In short, there existed a toxic thrombopenic purpura or purpura hæmorrhagica.

DISCUSSION

The blood dyscrasias developing in cases of syphilis under treatment with arsenical preparations fall into three fairly distinct subdivisions: (a) purpura, (b) purpura with hæmorrhages, (c) aplastic anæmia with hæmorrhagic diathesis.

Purpura—This group is characterized by a purpuric eruption involving the skin and mucous membranes. The extent of the lesion may vary considerably. Bleeding from the mucous membranes does not occur. The frequent association of fever and a general symptomatic reaction are of note. Anwyl-Davies³ reported a case in a young woman supervening after ten injections of neoarsphenamine. The condition appeared twelve hours after the last injection and was accompanied by an acute general upset and a moderate febrile reaction. Moore and Foley¹¹ demonstrated in their cases a well-defined blood picture. There was a distinct leucopenia, with a relative and absolute decrease in polymorphonuclear cells, an increase, both relative and absolute, of cells of the mononuclear series. Small lymphocytes remained in normal proportions. Recovery is the rule but such disturbances are warning signals against further use of the arsenical preparation responsible.

Purpura with hæmorrhages—Distinctive of this subdivision is the appearance of hæmorrhages from the mucous membranes in addition to the purpuric manifestations of the skin and

mucous membranes. In typical cases there have been described oozing from the gums, epistaxis, rectal hæmorrhages, uterine hæmorrhages, hæmaturia and retinal hæmorrhages. This class is also separated from the previous group by a marked decrease in the blood platelets, a prolongation of the bleeding time, and non-retraction of the clot. This is a symptomatic thrombopenic purpura in contradistinction to the earlier group which is a non-thrombopenic purpura. The remaining blood picture is similar. Weil and Isch-Wall⁴ cite two fatal cases. In one, the patient had received two injections of neoarsphenamine (0.1 and 0.15 gm respectively). The red blood cells numbered 3,000,000 per cmm and the patient died from a general intoxication.

Aplastic anæmia with hæmorrhagic diathesis—Distinguishing this variety is the occurrence of a severe primary, aplastic anæmia with purpuric and hæmorrhagic manifestations. This type is only differentiated with difficulty from a primary or Addisonian anæmia. In fact neoarsphenamine intoxication should be considered as a causative factor in a cryptogenic primary anæmia. The resulting course is often rapid, stormy and fatal. Blood smears reveal anisocytosis, poikilocytosis, basophilic degeneration and stippling. As in the preceding types leucopenia, agranulocytosis, relative lymphocytosis and increase in the monocytes are characteristic. A high colour-index may also be present. Recovery may take place.

A review of the literature supports the view that arsphenamine (606) is not the culpable arsenical preparation, but that neoarsphenamine and sulpharsphenamine are the responsible ones (see Table I). A corresponding

TABLE I

Reporters	Preparation	Lesion	Result
O'Leary and Conner ⁵	Sulpharsphenamine	Purpura hæmorrhagica	Recovery
O'Leary and Conner ⁵	Sulpharsphenamine	Purpura hæmorrhagica	Recovery
Gorke ⁶	Neoarsphenamine	Aplastic anæmia	Fatal
Gorke ⁶	Silber Arsphenamine	Aplastic anæmia	Recovery
Combes ⁷	Sulpharsphenamine	Aplastic anæmia	Fatal
Chatellier ⁸	Neoarsphenamine	Purpura hæmorrhagica	Fatal
Callomon ⁹	Neoarsphenamine	Purpura hæmorrhagica	Fatal
Anwyl-Davies ³	Neoarsphenamine	Purpura	Recovery
Smith ¹⁰	Neoarsphenamine	Purpura hæmorrhagica	Recovery
Moore and Foley ¹¹	Neoarsphenamine	Aplastic anæmia	Fatal
Moore and Keidel ¹²	Neoarsphenamine	Aplastic anæmia	Fatal
Labbé, etc. ²	Neoarsphenamine	Purpura hæmorrhagica	Fatal
Eschbach ¹³	Neoarsphenamine	Purpura hæmorrhagica	Fatal
Weil and Isch-Wall ⁴	Sulpharsphenamine	Aplastic anæmia	Recovery
Weil and Isch-Wall ⁴	Neoarsphenamine	Purpura hæmorrhagica	Fatal
Weil and Isch-Wall ⁴	Neoarsphenamine	Purpura hæmorrhagica	Fatal
Widal, etc. ¹⁴	Neoarsphenamine	Aplastic anæmia	Recovery
Maderna ¹⁵	Neoarsphenamine	Purpura hæmorrhagica	Recovery

reaction has not been seen subsequent to arsphenamine therapy. The purpuric-anæmic syndrome may follow either intramuscular or intravenous injections.

Two factors are possibly at fault for the development of this syndrome. The first is the influence of arsphenamine on the coagulability of the blood. Flandin and Tzanek¹⁶ believe that arsphenamine disturbs the normal coagulability of the blood by its action on thrombin or its precursors. They report that the coagulation time may be prolonged to 30 minutes and upwards following the intravenous injection of arsphenamine, and that this state may last several hours. They also consider arsenobenzol superior to citrate as an anti-coagulant for indirect blood transfusions. Trost¹⁷ in 1923 published similar views. In the United States Public Health Service, in experimental work on animals after the injection of neoarsphenamine the vein must be tied as profuse bleeding has been known to occur. The same regulation does not hold for arsphenamine (Schamberg¹⁸).

It is a common observation that with the reduction of the blood platelets below 60,000 per cmm that hæmorrhagic purpuric lesions develop, which provides an additional etiological factor.

That neoarsphenamine and sulpharsphenamine exert a toxic action on the bone marrow has been generally accepted. All blood elements are thereby affected. In a fatal case reported by Moore and Foley¹¹ such degenerative changes were seen at necropsy. The marrow was definitely aplastic and showed signs of exhausted activity. A striking feature was the absence of mature forms of the leucocytic series. In another fatal case recorded by Moore and Keidel,¹² with the microscopic study by Dr W G MacCallum, it appeared that the bone marrow of the femur had ceased entirely to produce the elements of the blood. In short, these arsenical preparations exert a direct destructive action on leukocytes, platelets and red blood cells. The interference with the platelets makes the hæmorrhagic diathesis and the leukopenia and anæmia result from the toxic action on the other elements, namely, the white and red blood cells.

The similarity of the blood picture and the bone marrow lesions to that seen in cases of benzol poisoning is noteworthy. Selling¹⁹ de-

scribed the latter intoxication. In neoarsphenamine there is a double benzol ring. Auberton² believes that it is the benzol radical that is responsible for the pathological process. Moore and Foley¹¹ state that the most satisfactory theory is that there is some impurity in the drug, or that, under unknown circumstances, it breaks down in the body into some compound that produces the reaction. The case here reported and also the one described by Smith¹⁰ rather dispels the idea of impurity, since on two separate occasions a hæmorrhagic diathesis developed, different ampoules of neoarsphenamine were used, and no other reactions occurred in other patients under treatment at that time.

The rarity of the lesion is striking. Our case, described above, is the first observed in this hospital where there is an annual admission of 19,000 patients to the wards and out-patient department.

TREATMENT

Prevention is, as in many other instances, the best remedy. The occurrence of mild nitritoid symptoms and slight purpuric lesions are a prodromal indication. Jaundice may also appear in like manner. In such cases arsphenamine and other antiluetic remedies can be safely used and should be substituted. As neoarsphenamine and sulpharsphenamine are arsenical preparations sodium thiosulphate intravenously is indicated, in increasing doses from 0.15 to 0.6 gm in 20 per cent aqueous solution daily. In cases that develop a progressive anæmia repeated blood transfusions have been life-saving. These enable the patient to live while the toxin is being eliminated and the blood centres are thereby given a chance to regain their function. This process is usually slow except in young adults. Weil and Isch Wall⁴ note that with transfusions convalescence is often obtained without relapse, but that in pernicious anæmia transfusions are of no ultimate benefit.

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RESULTS OF THE OPERATIVE TREATMENT OF DUODENAL ULCERS IN A SERIES OF CASES

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THERE exists at present a considerable difference of opinion as to the value of various types of operation for chronic duodenal ulcer, and it was thought that it might be of some interest to endeavour to ascertain the late results in such cases in the public wards of the Toronto General Hospital.

The five-year period, January, 1921 to January, 1926, was selected, so that all cases reported must have been operated upon at least two years. The operations were performed by the various members of the surgical staff of the Toronto General Hospital, and the results are those of the surgical service as a whole rather than of any individual group.

During this five-year period 64 cases of chronic duodenal ulcer were operated upon in the public wards. It has been possible to trace only 48 of these cases, or 75 per cent. Of the cases traced those living in Toronto were seen and interviewed, and the large proportion of them were examined radiologically by Dr. Dickson. Those living outside the city, who have been noted as having been traced, reported through a questionnaire.

In the series there were 13 women and 51 men, being 20 per cent and 80 per cent, respectively. The average age of the women was 37, the average age of the men, 41. The ages at operation varied from 16 to 60 years. The average of duration of symptoms was 10 years, varying from 6 months to 40 years.

There were four post-operative deaths in the

series. In one case the man died of hæmorrhage and in another, the cause would seem to have been hæmorrhage, but there was no post-mortem. In the other two cases the cause of death was broncho-pneumonia. There was one death occurring four years after operation. This man died of acute small-bowel obstruction but had evidently been perfectly well until the onset of the fatal illness.

The following types of operation were carried out—

	Cases
1 Simple gastro enterostomy	17
2 Gastro enterostomy and appendicectomy	20
3 Gastro enterostomy, appendicectomy and cholecystectomy	2
4 Gastro enterostomy, appendicectomy plus some local treatment to the ulcer, e.g., excision or cauterization	15
5 Pyloroplasty (Mayo Type)	7
6 Pyloroplasty (Finney Type)	3

In order to tabulate results it was thought advisable to divide the cases into four groups.

1 *Recurrences*—These were cases that were definitely proved to be such, either by x-ray, hæmorrhage, or subsequent operation.

2 *Completely Cured*—These people admitted without any qualification that they felt completely well, and those who were submitted to x-ray showed no pathological state.

3 *Greatly Improved*—In this group have been placed those people who are to all intents and purposes cured, that is, their economic disability is nil, but who complain at intervals of vague digestive symptoms, chiefly gas following the

taking of food and some degree of constipation. In those who were x-rayed there was no evidence of recurrence.

4 *Improved*—This group had lost, to some degree, their old symptoms of indigestion, but were not able to carry on with the same work as before operation. They did not regard them-

In Group C there were, in all, 10 cases, and of these 9 cases traced. There was one recurrence. This man had a recurrence of his indigestion within eighteen months. He went to a clinic in another city where a positive radiological diagnosis of ulcer was made, and where he had a posterior gastro-enterostomy done.

TABLE
RESULTS OF VARIOUS GROUPS OF OPERATIONS

	Group A	Group B	Group C
Number of Cases	39	15	10
Traced	28	11	9
Recurrence	2 (7 per cent)	1 (9 per cent)	1 (11 per cent)
Completely Cured	14 (50 per cent)	6 (54 per cent)	4 (44 per cent)
Greatly Improved	8 (29 per cent)	2 (18 per cent)	2 (22 per cent)
Improved	1 (4 per cent)	0	2 (22 per cent)
Dead	3 (10 per cent)	2 (18 per cent)	0

selves cured. In many cases home conditions were very unfavourable.

For purposes of analysis the operations done were divided into three groups.

A Simple gastro-enterostomy, gastro-enterostomy and appendicectomy, gastro-enterostomy, appendicectomy and cholecystectomy.

B Gastro-enterostomy, with or without appendicectomy, plus some local treatment of ulcer, *e g*, cauterization, etc.

C Pyloroplasty (Mayo or Finney Type).

Of the first group there were, in all, 39 cases, and of these 28 were traced. There were two recurrences, being 7 per cent of number traced. Of these one recurrence was in nature of a stoma ulcer, which perforated and was operated upon as an emergency, the perforation being closed. He has been well since. The second man had a recurrence of hæmorrhage, and ultimately developed insanity and is at present in an asylum.

Fourteen cases of the 28, or 50 per cent, came under the group of completely cured, 8 cases, or 29 per cent, were greatly improved, and there was 1 case in the improved group, 3 cases died (all these were post-operative deaths).

In Group B there were, in all, 15 cases, and 11 of these was traced. There was 1 recurrence, being 9 per cent of the number traced. This man had a recurrence of hæmorrhage, has been operated upon since that time, a transection of the stomach being done, and has had hæmorrhages on two or three occasions since his second operation. Six cases, or 54 per cent, were placed in the group as complete cures. Two cases, or 18 per cent, were placed in group three, as greatly improved. There were two deaths in this number, one being a post-operative death, and the other case dying of intestinal obstruction four years after the operation.

If one adds, then, in each group the completely cured and the greatly improved the results in each case stand as follows—

	Per Cent
Group A (Simple gastro-enterostomy, etc.)	79
Group B (Gastro-enterostomy and some local treatment to the ulcer)	72
Group C (Pyloroplasty)	66

There were 14 cases who had presented varying degrees of stenosis prior to operation. The operations in these cases were—In 12 cases, a simple gastro-enterostomy, in 1 case, a gastro-enterostomy, with Balfour cauterization of the ulcer, in 1 case, a pyloroplasty.

Of the 14 cases, 2 were untraced, 11 were completely cured, 1 case was greatly improved.

There were 14 cases who had presented symptoms of hæmorrhage before operation. Three of these were not traced, 1 died (post-operative), 1 recurred, the recurrence being in the nature of a hæmorrhage (this case had a simple gastro-enterostomy), 9 are well, either completely cured or greatly improved. None of these nine has had any further hæmorrhage.

RADIOLOGICAL SURVEY

One is indebted to the Radiological Department of the Toronto General Hospital and personally to Dr W H Dickson, for this particular part of the work.

Twenty-eight cases in all were brought back for radiological investigation. Of these 23 had had a gastro-enterostomy performed. In none of them was there any evidence of recurrence, or activity of the ulcer in the duodenum, though evidence of scarring was noted. Neither was there any evidence of a stoma ulcer.

In 22 cases, the stoma was noted as functioning "extremely well," "very well," or "fairly well." In one case, where a gastro-enterostomy

been performed, there was no stoma seen at this examination

Of the 22 cases noted above, in nearly every case 90 per cent of the meal was seen to pass from the stomach by way of the gastro-enterostomy opening

In five cases of pyloroplasty examined by this method, there was no evidence of recurrence or of any six-hour delay, but Dr Dickson noted in every case a hyperperistalsis of the stomach and in his opinion they emptied the stomach against a certain amount of resistance

CONCLUSIONS

1 Operative treatment has given eminently satisfactory results in 75 per cent of all the cases traced. A further small percentage (7) were greatly improved

2 Gastro-enterostomy would seem to have given slightly better results than gastro-enter-

ostomy plus local treatment of the ulcer. Both of these procedures were definitely better than pyloroplastic operations

It must be borne in mind that simple gastro-enterostomy was the operation of choice in those cases which had developed stenosis, and it is an accepted fact that such cases do exceptionally well with such treatment

3 Where the stoma is properly placed, it evidently continues to function for periods of two to seven years as shown by the radiological examination in these cases. It has been the impression of some teachers that following the healing of the ulcer the gastro-enterostomy ceased to function

4 In a limited number of cases, pyloroplasty, of either the Mayo or Finney type, did not seem to give as satisfactory results as the older operations

VESICAL FIBROMA

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NON-PAPILLARY benign tumours of the bladder are, according to the literature, uncommon. The usual types of this tumour are, fibromata, myomata and fibro-myomata. The first are very rare. Koll¹ collected 38 cases of so-called "fibroids," 35 were myomata or fibro-myomata, and 3 were fibromata. A search of the literature reveals one other fibroma, reported by Latzko²

The following case is one of fibroma of the bladder. It is interesting on account of the rarity of this type of tumour and also because of the method of treatment employed

CASE REPORT

Mrs L, aged 32, admitted to the urological service of the University Hospital on March 4th, 1927

Complaints Dysuria and hæmaturia

History of Present Illness She stated that for the past four years she had had intermittent attacks of dysuria, frequency, and hæmaturia. These attacks came on at irregular intervals, and usually lasted from three to seven days. During the intervals she was without symptoms. The usual attack consisted of a marked desire to void, and was followed by bearing-down pains and, later, hæmaturia. Rest in bed and opiates gave relief in time. The family and personal history revealed nothing of importance

Physical Examination A well-developed and well-

nourished female of about the age stated, in no apparent pain or distress. All the systems, except the genito-urinary, were negative on careful examination

Genito-urinary System No costo-vertebral tenderness, right or left, the kidneys were not palpated, no tenderness along the course of the ureters, no suprapubic tenderness. Pelvic examination showed the uterus and adnexa to be normal

Laboratory Findings Urine, clear, amber, acid, specific gravity, 1016, albumin, negative, sugar, negative. Microscopically, occasional red blood cells, no pus, no casts. Blood count, red blood cells, 4,500,000 per c mm, white blood cells, 8,000, hæmoglobin, 90 per cent. Wassermann test, negative. Blood chemistry, non-protein nitrogen, 32 mgm per 100 c c, urea, 16 mgm per 100 c c, creatinin, 12 mgm per 100 c c. X-ray examination of the urinary tract was negative for calculi

Cystoscopic Examination (March 5th, 1927) urethra normal, bladder mucosa not inflamed, ureteral orifices normal in contour and position. Situated one half an inch above and to the outer side of the right ureteral orifice was a tumour mass, the size and shape of a Lima bean. It had the appearance of a solid non-papillary tumour. It was attached by a slender pedicle about three quarters of an inch in length, and was freely movable. It did not bleed easily. There were no other tumour masses present

Diagnosis Non-papillary benign tumour

Operation (March 6th, 1927) Under ether anaesthesia an operating cystoscope was introduced into the bladder. The pedicle of the tumour mass was completely fulgurated, and the tumour removed with a cystoscopic rongeur. The base of the pedicle was re-fulgurated and all bleeding stopped. The remainder of the bladder wall was again examined and found normal. The patient made an

uneventful recovery and was discharged on March 8th, 1927

Pathological Report (By Dr Harold Vango, Department of Pathology, University of Alberta) An ovoid tumour mass measuring $2 \times 1 \times 1$ cm. It is of firm consistency and apparently covered with mucous membrane. A small pedicle 1 cm is attached. Microscopical examination shows a soft fibromatous structure, a portion of which is covered by typical bladder epithelium. The tumour mass is composed of fibroblasts imbedded in a soft vascular matrix, with a few scattered bundles of collagenous fibrils. Scattered throughout the tumour are many mononuclear cells, mostly lymphocytes and plasma cells. These cells have a tendency to a perivascular arrangement. Several large lymph vessels are also present. Vascularity is most marked at the periphery of the tumour. Here the vessels are small with thin walls and resemble vessels of granulation tissue. The central area shows a small amount of fatty tissue surrounding a large blood vessel. There is no evidence of epithelial lined spaces or of muscle content, and therefore no suggestion of Müllerian body origin. Histologically, the structure is a pure soft fibroma, in which has occurred some inflammatory process. The mass shows some evidence of degeneration and stains poorly.

COMMENT

The most commonly occurring tumours of the bladder are epithelial, papillary, villous growths, which probably often originate as the result of chronic irritation and are often benign, but not infrequently occur as papillary carcinoma.

The tissue (or histoid) type of tumours occurring in the bladder may be of a mature, differentiated form, (benign) or of an immature, undifferentiated form (sarcoma). Of the benign type there occur myoma, fibromyoma, myxoma, fibroma, and angioma. Of these, by far the most common are the myomata or fibromyomata. In the latter form, the connective tissue is a questionable part of the tumour growth and is possibly only stroma. Pure fibromata are rare, as is evidenced by careful review of the literature, in which we could find only four such cases, and this report adds one more.

Fibromata are divided into two groups: 1 Fibroma durum (hard fibroma), 2 Fibroma molle (soft fibroma).

The former shows on section thick closely packed bundles of fibres, poor in cells and nuclei. The soft fibroma shows very loose delicate fibrillar threads and is rich in cells and nuclei. Here the maturity of cells is only approximated and the tumour therefore shows a certain atypical behaviour in growth, and is more likely to undergo sarcomatous growth, or recur after removal.

The various types of the so-called "fibroids" of the bladder do not vary in respect to symptomatology or treatment. The myoma and fibromyoma are likely to attain and do attain greater size. Kusnetzka, as reported by Kostjurin, had a case in which the fibromyoma weighed 9,200

grams. Fibromata do not attain a large size. They may undergo certain changes such as calcification, or necrosis, or cavities may form and become cystic.

The symptoms vary with the type, location, and size of the tumour mass. Those in the fundus, or with short pedicles, may be symptomless and only found during routine examination or post-mortem. Those nearer the bladder neck, or with long pedicles, may undergo torsion or interfere with urination, and dysuria, hæmaturia and frequency result. The tumour may be so large that it diminishes the bladder capacity and frequency of urination occurs. There are no symptoms distinctive from vesical papillomata.

The diagnosis is made by cystoscopic examination. The characteristic findings are those of a smooth well-circumscribed tumour mass with a long or short pedicle, which is easily differentiated by its structure from a papilloma. In the differential diagnosis cystic masses must be considered, such as an ureterocele, and adenoma of Müllerian or prostatic origin.

The method of treatment depends on the size and location of the growth and the length of the pedicle. Suprapubic resection in the majority of cases will be necessary. But in the case reported fulguration of the pedicle was quite easily performed and it is apparently the only case on record which lent itself to this particular procedure.

The prognosis to be given in these cases is usually very good, and a permanent cure results after their removal, but it must be remembered that soft fibroma may recur or undergo sarcomatous change.

SUMMARY AND CONCLUSIONS

1 Vesical fibromata are rare. This case brings the total to five.

2 Fibromata are divided into (a) fibroma durum, (b) fibroma molle. The latter are the more likely to recur or undergo sarcomatous change.

3 Symptoms arose in this case from a combination of torsion of the pedicle and interference with the urinary outflow.

4 The case described is one of soft fibroma which was removed by cystoscopic manipulation.

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CO-OPERATION OF HEALTH DEPARTMENTS AND HOSPITALS*

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CO-OPERATION of all health agencies in the community, a clear understanding of the part each has to play in promoting and securing the greatest degree possible of health, happiness and prosperity among the public generally, should be the objectives of the different organizations which are here represented. Happiness and prosperity are included with health because no community can be happy or prosperous which has a low standard of general health. The economic loss entailed by disease, sickness, and ill health is incalculable. The increasing cost to the individual, and to the public generally, of medical service including hospital charges makes it all the more important that that service should be so efficient as to reduce to a minimum the number of days of incapacity and bring about the restoration to health in the shortest possible time. This aspect of the situation should be stressed in dealing with the public, in order to counteract, as far as possible, the tendency to delay in calling in the aid of medical services on account of the expense or financial obligation involved. The owner of an automobile, if he is wise, when he observes some squeak or adventitious noise about the mechanism of his car, or any failure of its parts to function properly, does not delay in having it examined by an expert mechanic. In this he at trifling expense often prevents more serious developments, which may be very costly and may involve grave danger to life or limb. The same owner often fails to take the same care of the mechanism of his own body when he becomes conscious of its lowered efficiency. The periodic examination of individuals apparently well, now so strongly advocated by the American Public Health Association, has much to commend it and is fortunately being increasingly adopted as a means to prevent at its inception a decline in health or efficiency.

The combination of the Health Officials'

Association with the Hospitals and Nurses' Association effected last year, and our meeting together as associated organizations in the interests of humanity, are a happy augury of what the future holds out in health service to the community. Health officials in the past have possibly devoted their energies and limited their endeavours too exclusively to the prevention of communicable disease. The tendency at present is to widen the scope of diseases in which health departments have a definite interest. At recent meetings of the American Public Health Association, the prevention of cancer and heart disease were included in the program for discussion, and the Health Department of New York State has definitely taken up the control of cancer as one of its functions. On the other hand, the medical profession and professional nurses, as well as hospital authorities, have perhaps given their attention too largely to the cure or alleviation of diseased conditions, without giving much time or thought to their prevention where possible.

During the last year a committee of members of the American Public Health Association has sent out a letter and questionnaire to 247 health officers of cities, and to 1,365 general maternity and children's hospitals in the 247 cities represented. The object was to obtain information regarding the relations between health departments and hospitals, and under this heading a preliminary report from this committee is given in the March number of the *American Journal of Public Health*. No specific recommendations are made at present. It is my purpose later to refer briefly to some things in this article and to indicate how far we have gone in Edmonton in adopting some of the ideas there indicated as advantageous, limiting my remarks to municipal hospitals for the isolation and treatment of communicable diseases.

It is a matter of history that it was only forty years ago that in England contagious disease hospitals were built on an extensive scale, with the expectation that hospitalization would con-

* Read at the Conjoint Section of the meeting of the Hospitals and Nurses' Associations and the Health Officials' Association of Alberta, at Calgary, June, 1928.

control the acute infectious diseases. That expectation has not been realized, as there has been no significant decrease in the morbidity rate, especially of scarlet fever, though the mortality rate has unquestionably been lowered. While it is probably correct to say that this has been our experience also, it is nevertheless very important that municipal hospitals for the treatment of communicable disease should be provided in all communities, including the rural ones, for the following reasons:

1. Because of the lack of proper facilities for isolation and treatment in the average home, this is particularly true of the rapidly growing cities and towns of western Canada,

2. Because of the difficulty of having quarantine regulations properly observed at home, and the increased danger of communicating the disease to other members of the family not already infected,

3. Because in a well designed and conducted hospital we may more closely approach absolute isolation and keep the patient under conditions more likely to prevent complications arising,

4. Because by removing the patient from the home prolonged inconvenience to the well inmates, and financial loss from interference with occupation and social intercourse may be avoided or minimized,

5. Because medical or surgical cases in general hospitals not infrequently are incubating some infectious condition when admitted, which when it develops is a menace to other patients unless the patient is promptly removed and isolated. This it should be possible to accomplish without endangering the patient's welfare, or unduly interfering with the continuation of the medical or surgical treatment being given. This situation can be best met through having in the same neighbourhood a properly equipped isolation hospital to which all such cases can be transferred.

It is a matter of experience that the prompt removal of a case of diphtheria or scarlet fever from a home very frequently means the protection of other inmates and the limitation of the disease to the individual removed. With measles, chickenpox, mumps, or whooping-cough, however, this is not the case, as all susceptible cases are usually in the incubation stage before the first case is discovered or removed. In well conducted hospitals, moreover, it has been

demonstrated that the death-rate is usually less than half what it is among cases treated at home. We have only to visit the homes of the poorer classes, from which the majority of our patients come, to realize why this should be the case. Both from the standpoint of the patient himself and the community generally it is advantageous that the majority of our cases, excepting the minor diseases, should be treated in an isolation hospital equipped and conducted in such a manner that the patient himself not only receives the best of care and treatment for the particular disease he has, but is protected against acquiring other diseases which are being treated, or which other patients may bring into the institution impossible of diagnosis at the time of admission. During 1927 our isolation hospital cared for 92 per cent of scarlet fever and 90 per cent of diphtheria cases with most satisfactory results. Of 54 cases of smallpox 33, or 61 per cent, were also provided for in a specially isolated ward. This arrangement for the care of smallpox is very satisfactory and absolves the Board of Health from the heavy expense of providing for smallpox in a separate building as was formerly thought to be necessary. Now that our Public Health Act permits of quarantining and treating smallpox cases in the home at the discretion of the Medical Officer of Health, we expect to be able to handle smallpox satisfactorily with this small isolated ward of four beds, unless unfortunately an epidemic of unusual proportions should develop. In following this course we are not unique apparently, judging from the report on this matter by the committee of the American Public Health Association already referred to, which is worded as follows, "Not the least significant of the entrance of the private hospital into this public health field is the number which receive smallpox—a situation which seems to presage the doom of the pest house."

While an isolation hospital does not need to provide accommodation to any great extent for measles, chickenpox, mumps, and whooping-cough, of which usually too limited a number will apply for hospital treatment to make it necessary to provide special wards for their reception, the responsibility nevertheless exists to provide for an occasional case of these diseases. Many young men and women of our cities live as individuals in hotels or rooming-houses, the

latter of which afford no means of getting meals or food on the premises. Because of this, and because of the impossibility of obtaining proper treatment or isolation of cases of the minor infections which not infrequently develop among young adults who have not developed immunity previously, the absolute necessity exists of removing them to a hospital, and the only hospital which can or will receive them is an isolation hospital. For such individual cases a series of small wards should be available, and all the necessary precautions taken to prevent cross infection, by careful nursing and the practice of medical asepsis. The ideal hospital, which on account of excessive cost of construction and maintenance would seem to be unattainable in smaller cities, would necessitate the provision of a separate ward for each patient, on admission to which he could be kept a sufficiently long time to cover the incubation period of any other disease he might possibly be incubating. This alone would prevent or reduce to a minimum the possibility of cross infection. Usually too limited a number of such individual wards are available, as is the case at our Edmonton hospital, to make it possible to carry out this period of detention in single wards, except in a minority of cases. The six wards we have have proved to be very useful in treating the odd case of erysipelas and isolating any case in which the diagnosis had not been definitely established. A considerably increased number of these detention wards in the construction of this otherwise admirably designed and efficient hospital would have more closely approximated to the ideal suggested.

Time will not permit of going into details as to the construction or management of isolation hospitals. Suffice it to say that cross infection is now controlled and prevented by following out the well-known routine of medical asepsis as practised in modern hospitals, with the emphasis on personal contact as the chief cause of communication of disease, and a careful technique and strict discipline as applied to the nurses, physicians, attendants and employees.

In some cities the hospital for communicable diseases is under the control of the Medical Officer of Health and operated independently of other hospitals. This does not commend itself either as an economical method or as likely to give the best service. In Edmonton the best

type of co-operation between health departments and hospitals is in operation, since the management of the isolation hospital has been transferred to the city-owned general hospital, the Royal Alexandra. The advantages of this form of co-operation and the general principles which should govern both parties to it are so well expressed in the report of the committee of the American Public Health referred to that I take the liberty of quoting from it as follows:

"The utilization by health departments of private general hospitals for the care of acute communicable diseases is now recognized as a sound policy which holds advantages for both groups. For the health department these are chiefly (1) The economy in the cost of controlling disease, and (2) provision of better service.

"The hospital derives advantage from the arrangement due to (1) The broader service it can offer internes, (2) the student nurses being able to receive desirable experience in this special field at their own institution instead of being sent to other hospitals, and (3) payment from public funds for patients with communicable diseases who are unable to pay or are hospitalized against their will.

"The numerous and successful instances of co-operation in this field suggest their desirability and community value. In the development of such programs it should be recognized that in the hospitalization of communicable disease the responsibilities of the health department relate primarily to approval of quarters, equipment, etc., and to the admission and release of patients but do not extend to administrative responsibility within the hospital."

For satisfactory co-operation therefore the responsibility for admission and release of patients must necessarily rest with the health department, which, however, exercises no direct authority in the internal administrative control, which is the function of the hospital authority. On the other hand, the health department must depend on the hospital authority to provide adequately for all cases of communicable disease where hospitalization is necessary.

Further advantages of co-operation of health departments and hospitals are suggested in this committee report, where the health department obtains laboratory service from the hospital, or the reverse, where the hospital uses a health department laboratory equipped and provided by the municipality. In Edmonton at the various large general hospitals fully equipped laboratories are provided, but only that of the municipally owned Royal Alexandra Hospital is utilized to the extent of handling the laboratory work of the patients treated in the isolation hospital attached. For many years the health department has been utilizing the service

supplied by the Provincial Laboratory of the University of Alberta

Another form of co-operation between health departments and hospitals is the establishment of clinics at the latter. The simplest form of co-operation is where the hospital furnishes the quarters and equipment while the health department provides some or all of the medical, dental, nursing, and clerical service. There may be complete control of the clinic by the hospital, with the health department merely co-operating in public health relations or assisting by a financial subsidy, or the other extreme, where the hospital furnishes only the quarters and the health department provides everything else, including service, drugs, etc. Such co-operation is at the present time confined to the larger cities, where fully organized health departments

are established and large well equipped hospitals exist. In Edmonton the necessities of the situation are sufficiently well met at present through the operation in the down-town area of the Provincial Clinic, which is carried on under the supervision of the University Hospital staff. To this clinic the city of Edmonton makes an annual grant of \$100 towards the upkeep of the dispensary, which supplies medicines for relief cases.

In conclusion, I desire to emphasize the necessity of co-ordinating for public service all the health agencies at work in our communities. All petty rivalries should be eliminated, and co-operation, continuous not sporadic, voluntary not compulsory, should be for mutual advantage, the goal of our attainment.

THE RELATION OF THE PRACTISING PHYSICIAN TO PUBLIC HEALTH ACTIVITIES*

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CONSIDERABLE discussion has taken place in the last few years as to the relationship of the medical profession to public health agencies, official or non-official, and more has been said than has appeared in print. The activities of certain agencies have been interpreted in a few localities as suggesting state medicine, and where this has happened the usual harmony and co-operation between the medical profession and these agencies has been disturbed. A health officer not long ago remarked to me that these differences arose only in communities where the public health agencies were aggressive and the medical profession conservative and unsympathetic toward anything that suggested modernism. I will not discuss whether some of these health agencies loved and pursued some objective not wisely but too well, as I think has happened in some cases, nor will an attempt be made to discuss whether there are countries or communities where something approaching a form of state medicine may not

be advisable. That subject is left for consideration by those who are competent to deal with it. Personally, I am as much opposed to state medicine, as the term is ordinarily understood, as physicians generally are, but for the carrying out of legitimate public health projects, in my opinion, no encroachment on the province of the physician is necessary, and so far from begetting opposition should result in mutual helpfulness. My purpose is to indicate how essential the practice of medicine and the promotion of public health are to a community, and that they are not enemies or opponents but partners in building up and keeping in repair the community's health. As Dr. Arthur Dean Bevan,¹ Chairman of the Council of Medical Education in the American Medical Association, said last month at a meeting of the Council, "Medicine has become one of the greatest functions of modern civilization. It is in everyday contact with every individual in the community. Without modern scientific medicine, without modern public health service, our civilization would cease to exist. Great cities such as London,

* Read at the annual meeting of the Ontario Medical Association, Kingston, June, 1928.

New York, Paris, and Chicago would be impossible." What has helped to make possible great cities is also essential for rural communities even though the less density of population does not make the need so apparent. Dr. J. G. Fitzgerald, of Toronto, recently referred to this in an address² on "The future of public health," in which he said, "The conduct of organized public health work is now too largely confined to the populous centres, the safeguarding of the lives of mothers and little children should not be contingent upon residence in a city or large town."

The thought that the practising physicians and health workers are co-partners leads me to say that, in my judgment, of all the many agencies contributing to the up-building of public health, consciously or unconsciously, directly or indirectly, the physicians as a whole are making the largest contribution. The statement is made notwithstanding the remark made recently to me by a State Health Officer, who stands very high in the medical profession, when asked what he considered the outstanding public health problem in his state. His reply was "The education of the physicians as to the significance and importance of public health work." Having said all this, let us ask what we mean by the practice of medicine and what we mean by public health.

The new International Dictionary defines Medicine as "The science and art of dealing with the prevention, cure or alleviation of disease, in a narrower sense, that part of the science and art of restoring and preserving health which is the province of the physician as distinguished from the surgeon and obstetrician." Such a definition definitely makes *prevention* as well as *cure* a part of the function of the physician.

It was only to be expected that medicine and the function of the physician would be taken in a more restricted sense until the discovery of the causative agents of disease. As long as disease was considered an individual matter, without a knowledge of how causative agents may be passed from man to man or how a common cause may affect great groups of people, it was only natural that attention would be centred on the individual. The individual needed relief and little thought was given to conditions or agencies lying behind his illness that might result in striking down others of his

fellows. In the absence of a knowledge of the causation of disease, medicine and its practice became largely individualistic and the physician's part was conceived as being treatment of disease in the individual. Where our knowledge of the origin of disease is still limited to its symptoms in the individual this is still largely the rôle of the physician. With the discovery however that many diseases attack us through our contact with other living things, mostly man or develop through our occupation or environment, or through a deficiency of the food we eat, or in some other way, our conception of the range and scope of medicine and the function of the physician has greatly expanded.

What on the other hand is public health? The breadth of the subject makes it difficult to define. Professor Winslow³ of Yale defines it as "The science and the art of preventing disease, prolonging life, and promoting physical health and efficiency through organized community efforts for the sanitation of the environment, the control of community infections, the education of the individual in principles of personal hygiene, the organizing of nursing and medical service for the early diagnosis and preventive treatment of disease, and the development of the social machinery which will ensure to every individual a standard of living adequate to the maintenance of health, organizing these benefits in such fashion as to enable every citizen to realize his birthright of health and longevity." An attempt to furnish a briefer definition has recently been made⁴ by a committee appointed to make a census of health workers. They say that for the purpose of the census "Public Health Work shall be defined as those activities carried on by the individual himself or in connection with an organization, supported either by public or by private funds, this work to be directed primarily towards the prevention and control of disease, the promotion of hygiene, and the prolongation of life, rather than the cure of the already sick individual." Public health, it will be seen, is taken to represent a much wider field than that of medicine, including within its activities many workers not usually associated with medicine, such as the sanitary engineer, the veterinarian, the plumber, the statistician, the epidemiologist and the bacteriologist. Of course medical men, too, make use of the services of those who strictly speaking are non-

medical, such as radiologists, bacteriologists, chemists, and others. Some think many of these branches rightfully belong to medicine. Indeed as Dr. Rufus Cole⁵ recently pointed out "medicine occupies a peculiar position among the sciences. By workers in other fields of science medicine has been looked on askance, even disregarded, it has been even claimed that there is no such thing as a science of medicine. On the one hand, as medicine, it has been scorned and neglected, and on the other, as the medical sciences, it has been honoured and respected and held to embrace within its borders such important divisions of science as anatomy and physiology." Whatever medicine is supposed to embrace, almost from the very first, when it was as yet groping in darkness after the light, and while there was as yet no true conception of its scope and significance, it was recognized that the healing art was not a thing apart from what little was known of prevention. From the first, assistance was sought by the medical practitioner from sources other than those that were purely medical. For was not Æsculapius himself supposed to have legendary children, Hygieia and Panacea who assisted in the temple rites and fed the sacred snakes? With our increased knowledge of the causation of disease there has come a new and very definite conception of prevention and the place that it ought to occupy in the thought and program of the medical practitioner, as well as in the thought of all others who are desirous of promoting the common good. Dr. F. H. Garrison⁶ in the closing sentence of his *History of Medicine* states that "The aim of modern medicine, co-ordinate with the advancement of all the sciences, is the prediction and control of phenomena, the *prevention* (italics, the author's) as inclusive of the cure, of disease." Sir Arthur Newsholme⁷ recently pointed out that there are some diseases for which we cannot draw lines of demarcation between treatment and prevention, the one necessarily runs into the other. Such are tuberculosis and venereal disease, and to a lesser extent maternal care and the care and feeding of children. The chief business of the medical practitioner is to guide the sick to recovery, but he also has a duty in "the wider contact with society in the prevention of disease."

With the growth of the idea of prevention and the conception of its possibilities, there has

arisen a new sense of communal responsibility, so that not only the medical profession, but all health workers, official or non-official, feel in some way responsible for responding to the call for preventive action, in order that the pestilence which has walked too long in the darkness and the destruction which has wasted too long at long at the noon-day may be banished from the land. Descartes remarked long ago that we could be freed from an infinity of maladies both of body and of mind if we had sufficient knowledge of their causes and of all the remedies with which nature has provided us. We have not yet complete knowledge of either the causes or the remedies, but we have sufficient knowledge of the means of prevention to make it possible to prolong life, reduce illness, and make happiness more universal. According to the estimate of an eminent statistician, 33 per cent of all deaths are due to preventable disease, not to mention the inestimable amount of illness that does not at least immediately result in death. The physician of a few years ago might limit himself to curative medicine, and feel that in so doing he was fulfilling his mission as a practitioner. There is now however an ever-increasing demand by patients not merely to be cured of present illnesses, but for instruction in methods of preventing recurrences in themselves or in their families. Besides, as Dr. H. S. Cumming, Surgeon General of the United States said at a conference of officials of the American Medical Association and public health workers in March, 1927⁸ "People are interested in obtaining health, rather than in the method of obtaining it, and the medical profession must recognize this." The public as a whole is not interested in the present or the future of the medical profession and if the information that it seeks for its own protection and its family's protection is not forthcoming from the physician the public is likely to turn elsewhere for it. Unfortunately it too often turns to some cult or professional advertiser, that makes far reaching claims or it may seek counsel from the professional educator a type of person who, as I heard Dr. W. I. Mayo remark recently was "a good person to go to for information, but a poor person from whom to seek advice."

The conservation of health is a great economic problem, challenging the best thought and action of the people of to-day. It is, as Disraeli said, "the foundation on which reposes the

happiness of the people and the power of a country." Disabling disease is costing, on a conservative estimate, the United States annually \$2 000,000,000. The decrease in efficiency is estimated at another \$1,500,000,000, while the loss through premature death adds an additional \$6,000 000 000. We cannot grasp the magnitude of such figures, but they are sufficiently impressive to indicate that the public will not any longer be satisfied unless every reasonable effort towards prevention has been put forth to reduce or wipe out losses that are needless and avoidable.

People now know that public health measures can prevent disease. They have reached the position anticipated by Lord Palmerston," the Home Secretary of England in 1853 when at that time with the oncoming of spring it was thought an epidemic of cholera would occur. The Presbytery of Edinburgh wrote Palmerston asking that a national fast be proclaimed. He replied that the best course would be to execute measures to improve the sanitary condition of their towns and root out causes and sources of contagion, "which," said he, "it allowed to remain will probably breed pestilence in spite of the prayers of a united but inactive people." The physician appreciates the remark of Plato that "the poor man cannot afford to be sick," not because of the cost of medication (for medical service is often given free), but because of the loss in time and wages. The thoughtful physician knows full well that it is even more important to curb disease from the communal standpoint than from the individual standpoint. The physician is not only a physician, he is a citizen, so that both his place and his training make the public health a matter of special concern to him. He is usually the best qualified person to give advice on matters concerning the public health, or at least he ought to be. We have to remember, however, that ordinary facts about disease and its prevention are no longer hidden mysteries, or altogether foreign to the laity. There are certain phases of public health work in which the advice of a competent sanitary engineer or a plumber, or a trained health worker, might be of more value than the advice of a physician. Dr Victor C Vaughan in an address to the American Medical Association, not many years ago, used these words "Many of the more intelligent of the laity know much

more about preventable diseases than some of our physicians." Generally speaking however the physician is the natural leader and the best informed on matters that concern the public health. In all movements and campaigns where the public health is involved, it is the duty as well as the privilege of the medical profession to assume that leadership which its training and experience warrant. "The physician," as Dr Wendell Phillips¹⁰ President of the American Medical Association stated at the conference already referred to, "is the individual in the community with the basic knowledge necessary for proper public health work." Health programs in a community should not be launched without an effort to secure the co-operation and active leadership of the medical profession, and the initiation and direction of such programs should not have to be wholly assumed by those outside the profession, because nobody within it was sufficiently interested, public spirited, or provident enough, to participate in them. Many movements have suffered because medical men have withheld their co-operation and counsel, the result being that the direction of the movements fell into the hands of enthusiasts who were well-meaning but inexperienced and ill-informed, when a less conspicuous program, based on mature medical experience, would have resulted in permanent benefits.

That the medical man may give the proper advice and be competent to lead or assist in leading such movements, he must first of all be properly schooled himself. If the blind lead the blind they may both find themselves in the gutter. In his medical course the physician has learned the fundamentals that equip him to deal with questions affecting the health of the individual, and to some extent, groups of individuals, but, to quote Sir Arthur Newsholme¹¹ again, "Every physician within the scope of his own medical practice should become a medical officer of health." "There is needed," he says, "a reconstruction of the training of each medical student, which will make preventive medicine in its widest sense an integral part of his training, and will ensure that before he begins practice he has definite instruction in the application of the whole of his knowledge to preventive purposes. The past conception by the public of the relation of medical men to the community, apart from the special case of

medical officers, has been mistaken. The doctor has been regarded as a help when serious or acute incapacitating illness occurs, and he has but seldom had the opportunity of giving advice in the earlier and more controllable stages of illness. His training has been conducted on the assumption that his chief rôle should be on present lines, with the result that most medical practitioners enter into practice with a too scanty knowledge of hygiene and preventive medicine, and have to learn slowly in belated experience the influence of environment on the health of their patients." The blame for this unfortunate experience is not to be laid at the door of the physician, but rather to what in the past the public has demanded of him, and the kind of training he has received. Sir William Osler, with all his interest in curative medicine, stated that every physician who has in any way to do with the public health should be specially trained for it. In speaking of typhoid fever in 1913, he said¹² "How Galen would have turned up his nose with contempt at the water supply of the Dominion of Canada scoured so disgracefully by typhoid fever of late! The health officers should have special training in sanitary science, and special courses leading to diplomas in public health should be given in the medical schools. Were the health of the people made a question of public and not of party policy, only a skilled expert could possibly be appointed as a public health officer, not as is now so often the case, the man with the political pull." All physicians cannot become specialists in public health any more than they can in surgery or pædiatrics. To be a successful health officer one requires to be a good administrator. The kind of technique required here differs from that of surgery, it is the technique of dealing with people, the ability to convince them of the value of a project worth while, the ability to get popular support for such projects, the ability to give publicity to the work being done, in order that the public may be impressed and appropriating bodies made to see that the work should be supported. The successful health officer must also be able to get action without resort to police power, and yet must have sufficient backbone and fighting courage to stand up for what he believes to be in the best interest of his community. Many able physicians shrink from having to assume a post demanding such quali-

fications, but this does not mean that they should not be grounded in the principles of public health work, give it the benefit of their judgment and help to so guide it that it may become the vital force it ought to be in the community. Physicians who are not health officers but who interest themselves in health work can often wield special influence in moulding policies and putting over programs, just because they are not health officers. We are all convinced of the value and necessity of public health work. We may not approve of every form of work that has assumed the name of public health. The number of organizations in which health work is primary, secondary, related or incidental, is legion. There are something like thirty of them in the Federal Bureaus of the United States, while among non-official agencies there are many more.

There has been a good deal of duplication in health work, but with better organized state and provincial health departments, and with better local health organization, there is resulting through the placing of all health work in the local area under the city, county or district health officer, a very decided reduction in the amount of duplication. This placing of all health work under one head, preferably a full-time man not in the practice of curative medicine, tends to uniformity, economy and general efficiency. The better sanitary supervision, resulting in the better control of communicable disease, and the programs of health education have had far-reaching benefits. In the northern parts of this continent we have not had experience of the remarkable results following campaigns against yellow fever, malaria and hookworm, but even with our less evident and less tangible problems of prevention sufficiently marked results have been obtained in reducing mortality, lessening morbidity and absenteeism to impress the least receptive mind. Better health protection has resulted in better economic conditions and greater happiness among the people, for, as W. H. Lecky the historian remarks, "To raise the level of national health is one of the surest ways of raising the level of national happiness."

But are Public Health and those who work at it of any benefit to the physician? Are public health efforts depriving him of his livelihood and is there no off-setting compensation? In

such results are being obtained they are exactly what the physician himself labours to effect, consciously or unconsciously. Dr W D Haggard, in his presidential address to the American Medical Association¹³ in 1925, said "Medicine is the only profession that is literally and altruistically devoted to professional suicide." But, as he went on to add, the fields are still white unto the harvest, the physician's job is as yet unfinished, and if the old line of curative medicine diminishes, a new field is unfolding in the tendency for people more and more to seek the services of the physician to preserve rather than to restore their health. "Physicians," he said, "have been so busily occupied in the care of the acutely sick that they have had little time and paid little attention to those who were in apparent health." Public health agencies have done a great deal in directing the attention of people to the advantages of keeping well. So general now is the thought of keeping well that about 50 per cent of all advertisements have health or keeping well as the basis of appeal.

Public health agencies have been of great assistance to legitimate medicine through not being handicapped in their use of publicity, as physicians have been, because of certain ethical standards of the profession. Many projects of a communal nature require publicity if they are to be accepted by the public. A health officer, for example, who is not in the practice of medicine can make use of publicity in a way that would not be good form or expedient for the practicing physician. Health departments, too, have aided physicians by making laboratory facilities, vaccines and sera available for them, and in providing diagnostic consultant service for cases of communicable disease. A local health department, however, can do a great deal in cultivating and creating public confidence in the local physicians and their work, and in urging more general use of medical facilities. This the practicing physicians themselves cannot very well do. In my judgment, it is no function of a health department to give personal medical service to the public at large. In fact, when work for indigents has to be done, a department of health should only do it when physicians find it inconvenient to do so, or when it is done with the approval of the local medical society. There are deserving

cases that need attention that would be neglected without free service. There is perhaps no other class of professional men that gives as much free service as do the physicians. There is a class of people that, as Josh Billings says, "gets what they can for nothing and values it at what they paid for it." Public health workers while intensely interested in seeing that the needy get the service they require but cannot pay for, should be careful to avoid propagating pauperism. Programs of immeasurable benefit to a community have been carried out where the health department and the local medical society have co-operated, the physicians doing all the medical work and the health department managing the campaign. In a Western city more than 20,000 school children were given toxin-antitoxin for diphtheria prevention and all the work was done by the local physicians. All families able to meet the cost did so, and for all indigents the physicians did the work free. The result was that more than 95 per cent of all the school children were treated, and almost as large a percentage of pre-school children have since been included. The health department can aid physicians by giving advice to the public as to the inadvisability of wasting time with quacks and patent medicines, and the advisability of having a proper diagnosis made early in suspected cases of disease, and the desirability of the apparently well consulting the physician periodically in order to keep well. Where health departments have to do with school children, they can discover suspected defects and have the children referred to their family physician, and where a nursing service is at work, the nurse can follow up these cases and use every legitimate means to have the parents see that the children are taken to the physician. Thus the health department, instead of supplanting the physician, becomes an indirect agent for him to induce people to have whatever medical or surgical service they need. That the health officer may do this most effectively he should as already indicated be a full-time man, not competing with physicians in practice. Some few part-time men, because of their special fitness or influence in the community, can carry out such programs, but experience shows that they are few in numbers.

What on the other hand can the physician do

for the health department? If he is public minded and has sufficient training and interest in public health to induce him to identify himself with it, he can greatly assist. He can see that the department has proper contact with the medical profession, through the local county or city medical society. He can see that there is an active committee on public health relations that will serve as a connecting link between the society and the public health department. The local health officer, if a physician (which is usually desirable), should be a member of the local medical society. This will tend to promote mutual understanding and to prevent misunderstandings. In Milwaukee, according to Dr A T Holbrook,¹⁴ a splendid arrangement exists whereby a public health council of fourteen (six physicians and eight laymen) advises the local health department. In the Medical Society of King's County, New York, an active committee serves as a bond between the health department and the physicians. This committee took the lead in promoting health examinations by first examining 91 of the members of their own society. It keeps the society informed on health matters, so that mutual co-operation and understanding result.

The medical society can be of special assistance to health departments in getting moral and financial support. The health departments are often inadequately financed through meagre appropriations, because there is only one voice, that of the health officer, asking for support, and his voice is like that of one crying in the wilderness. If the medical profession, or medical society, would declare itself distinctly and emphatically, saying "We believe it is in the interest of our community and that it is essential for community safety and community health that an efficient, properly equipped, health department be provided," such a pronouncement, followed by personal support, would go far toward getting the necessary appropriations. What appropriating bodies need to be made to see is that the health department is just as important to a community as a fire department. You can destroy every dollar's worth of property in the world by fire, and the human race would survive and rebuild. If you destroy or incapacitate the human race, property would

have no value, and would immediately begin to pass away, never to return. For as Edwin Markham says —

"We are all blind until we see
That, in the human plan
Nothing is worth the making if
It does not make the man,
Why build these cities glorious
If man unbuilded goes?
In vain we build the world, unless
The builder also grows."

Curative and preventive medicine are not two wholly separate and independent entities. In a general way they can be demarcated and differentiated, but they are parts of one whole. They are parts of a properly articulated body of medicine, as surely as the eye or the hand is of the physical body, and if the eye or the hand suffer the whole body suffers with it. Dr Oliver Wendell Holmes said "Charity is the eminent virtue of the medical profession. Show me the garret or the cellar which its messengers do not penetrate. Tell me of the pestilence which its heroes have not braved in these errands of mercy. Name the practitioner whose footprints are not found in the paths of every haunt of humanity." A noble tribute to a noble profession, but is it not also true that there have followed the physician into those hovels and gloomy alleys, into places of squalor and pestilential disease, the nurse and the sanitarian, to stay or stem the tide of danger, and to pluck from harm's way those who otherwise would be offered as sacrifices on the altars of ignorance, neglect, or disease.

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Case Reports

AN UNUSUAL CASE OF ABDOMINAL INJURY IN A CHILD

By H. M. ELDER, M.D.,

Montreal

A boy, aged ten, was admitted to the Montreal General Hospital, (service of Dr. A. T. Bazin), on April 14, 1927, at 4 p.m., having been struck by a motor car. He was conscious and stated that both wheels of the motor car had passed over his abdomen.

Examination revealed a rather underdeveloped and undernourished French Canadian boy, who lay in bed in the dorsal decubitus, and was not apparently suffering very acutely. He had not vomited, and though very pale, was not in profound shock. His temperature was 99.4, pulse 110, respirations 24. Blood pressure was 70/35. There were two superficial scalp wounds in the occipital region, and an abrasion on the left buttock. The chest was resonant and the breath sounds normal. No evidence of fractured ribs could be made out. The abdomen was scaphoid with practically no respiratory movement. There was generalized tenderness, most marked in the right upper quadrant with splinting of the abdominal muscles. Liver dullness was not obliterated and there was no dullness in the flanks. Rectal examination gave no information. The reflexes were normal. White blood cells, 10,000 per cmm. Urinalysis showed no blood, chemically or microscopically.

In view of these findings, and also of the fact that no corroboration of the statement of his having been actually run over could be obtained, he was kept under observation. About six hours after injury, he became restless, and complained of crampy abdominal pain. He also commenced to vomit undigested food, and bilious material, but no blood. He constantly called for the bedpan, expressing a wish to go to stool, but without result.

Examination at this time revealed a slight fullness of the abdomen with the same tenderness as before, but with definite movable dullness in both flanks. His pulse had risen from 110 to 130, and the leucocyte count remained

stationary at 10,000. A tentative diagnosis of ruptured bowel was made, and laparotomy decided upon.

The abdomen was opened by a right paramedian incision and on opening the peritoneum there was a gush of blood. In view of the fact that a diagnosis of ruptured bowel had been made, no attempt was made to preserve this blood for auto transfusion. Exploration revealed a laceration about two inches long in the quadrate lobe of the liver, a laceration along the longitudinal sulcus, and stellate lacerations of the tail of the caudate lobe, all of which were bleeding freely. This hemorrhage was controlled by the insertion of mattress sutures of catgut. The stomach, duodenum, and spleen were examined with negative findings.

The small intestine, which had been noted to be in marked spasm in several places, was then followed from the duodeno-jejunal flexure to the cæcum, and, in the course of this, three intussusceptions were found, the largest being about two inches in length. These were milked out, and the remainder of the intestinal tract and bladder explored, but no evidence of injury was found. A cigarette drain was left in place, with the lower end at the foramen of Winslow.

During the operation the patient received 750 c.c. of 5 per cent glucose saline intravenously, which was allowed to flow as soon as the hemorrhage from the liver was controlled. Immediately on the conclusion of the operation, he was given a transfusion of 350 c.c. of citrated blood, his father being the donor.

After the operation, the patient had a temperature ranging from 100° to 102° F., and a pulse range of 128 to 150. There was a moderate amount of blood and bile draining through the incision, but the bowels responded well to pituitary extract and enemata. There was little vomiting, his fluid intake was fair, and was supplemented by rectal salines.

The convalescence appeared for some days to progress smoothly, though the appearance of a mucous discharge from the wound caused some speculation as to its origin. This discharge, however, caused no erosion of skin, and did not appear to be accompanied by any gastric

secretion Culture showed *Staph aureus* His appetite was good, and his bowels regular On the twelfth day after the operation he was on full diet

On the sixteenth day, May 1st, there was some bleeding from the drainage wound, which had not completely closed In conjunction with this, he vomited large quantities of watery material which was dark brown, and a chemical test showed the colour to be due to blood This continued for the next two days, in spite of the stoppage of all nourishment by mouth, and the administration of hæmostatic serum and morphia On May 3rd, he was given a transfusion of 250 c c of citrated blood, following which the bleeding promptly ceased though he did vomit blood once after the transfusion For the next six days he improved markedly, and was taking a Lenhartz diet, though complaining of occasional attacks of crampy pain after eating

On May 9th he again had a little bleeding externally, checked by hæmostatic serum, but on the 10th, there was severe hæmorrhage, again associated with hæmatemesis, and necessitating another transfusion, which was given that evening and repeated the following morning The day following he again vomited large quantities of altered blood, and there was also bleeding from the sinus He was then given 5 c c of 15 per cent calcium chloride intravenously and after this the vomiting ceased, and the hæmorrhage was apparently arrested, with the exception of one small hæmorrhage on May 14th, unaccompanied by vomiting At this time also there was a discharge from the wound of necrotic material resembling disintegrating omentum The more obvious bleeding appeared to be checked, but as he was so exsanguinated another transfusion was given on May 15th No more fresh bleeding followed this, but there was a discharge of necrotic fatty material associated with a chocolate fluid, and on May 21st, he vomited a large clot of blood Adrenalin 5ss was given by mouth, but with no noticeable effect

Except for a large tarry stool on May 22nd, nothing further occurred until May 24th, when he complained of pain and vomited altered blood There was also bleeding from the wound His condition at this time was very poor pallor, drowsiness, and a rapid thready pulse being marked features For the next four days there

was little change, the patient occasionally vomited small amounts of blood, and the dressings were constantly stained by bleeding from the wound On May 28th, another transfusion was given, followed by some improvement and this was repeated on May 30th

From this time on, he commenced to improve, and, in spite of an occasional hæmatemesis his progress, though slow, was steady The sinus gradually closed, and on June 24th, was entirely healed, and the patient began to improve slowly, and by the end of June he was able to sit up in a chair He was taking a modified Lenhartz diet at this time, and did not complain of pain or discomfort He was discharged to the Out-patient Department on July 14th just three months after admission

When seen on August 20th, he had regained his weight, had a good colour, and looked well The wound was well healed He was taking a normal diet, and suffered no discomfort

SUMMARY

This case is presented, not so much as an example of treatment, as on account of the unusual association of two distinct conditions, and the peculiar complications which arose

It would seem probable, in view of the sequence of events, that there had been either an injury to the duodenum or pyloric region which escaped notice at the time of operation or else the formation of an acute duodenal ulcer with hæmorrhages and perforation It appears impossible to explain the discharge of mucoid material from the wound and the repeated external hæmorrhages, always associated with mælena or hæmatemesis, upon any other grounds

This theory is borne out to some extent by the x-ray examination of the gastro-intestinal tract which was carried out on December 28th 1927 the report of which is as follows —

“Combined fluoroscopic and serial plate examination was made of the gastro-intestinal tract which shows the progress of the meal through the stomach, large and small intestines and colon

“*Diagnosis* — Negative for gastric ulcer and cancer The pyloric end of the stomach is somewhat irregular on the greater curvature side toward the right Cap is irregular and never well filled This is probably the result of adhesions secondary perhaps to traumatism and

operation in this area Stomach empties completely in three hours Stomach quite empty and no appendix seen in the twenty-four hour plate, at which time the hepatic flexure is rather pulled up toward the left "

At this time the boy professed himself as being completely well, was attending school, and living a normal life

A CASE OF CHYLURIA DUE TO FILARIA BANCROFTI, WITH LYMPH VARIX IN THE BLADDER WALL*

By RIDLEY MACKENZIE, M.D.,

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The case to be described was a negress, aged 28, a native of Barbadoes, West Indies, who came to the hospital complaining of frequency of micturition and cloudy urine

She had been in Canada for two years and her previous health had been good In October, 1926, the first symptoms appeared, which ceased without treatment, but appeared again ten days ago

She was a well nourished young woman The heart, lungs, temperature and pulse were normal, and there were no abnormal abdominal signs The blood count revealed a secondary anaemia, with no eosinophilia Gynaecological examination showed nothing except a retroflexed uterus

Cystoscopic examination—The bladder was tolerant of 500 c.c., with ordinary translucency, the ureteral orifices and the trigone were normal On the posterior wall, just above the projection formed by the impinging cervix, there was bullous oedema with inflammation, with two or three milk white glistening shreds 1 cm long adherent to the bladder wall These were passed later and were found to be portions of mucous membrane

Examination of the urine—The specimen when passed had a milky consistency, and on standing a precipitate formed, of a pinkish chrome colour The upper layer was opalescent, resembling, as a confière suggested, absinthe diluted with water The specific gravity was 1024, there were no sugar, casts, albumen, or pus cells In the precipitate, which was

largely particles of fibrin, Dr Perrin found the embryonic form of *filaria Bancrofti* in large numbers, coiling and uncoiling A specimen of blood taken from the patient at night showed the same organism in considerable numbers

She was admitted and treated with irrigation of the bladder and instillation of nitrate of silver together with the intravenous administration of salvarsan 0.6 gm weekly Treatment had no effect on the bladder condition nor on the microfilariae in the blood and she was discharged to report later

Filariasis is a rare disease in Canada and is always imported It is prevalent in the West Indies Australia the east coast of Africa, China and India Sir Frank O'Connor¹ pleads for a thorough investigation into the disease, claiming that 50 per cent of the inhabitants of India suffer from it and that Leprosy causes less misery and a lower mortality

Armstrong and Mullally² of Montreal reported two cases of negresses, who died from other causes and were found to have greatly dilated lymphatic channels in the abdomen, and in one of the cases microfilariae were found in the blood during life Primrose³ of Toronto reported a case of lympho-scrotum due to filariasis After removal adult filaria were found in the specimen by Dr J H Elliott In an operation on a broken down mass in the posterior triangle of the neck, six weeks later, apparently other adult worms were removed but the microfilariae disappeared from the blood where they had been found previously in great numbers The disease is not confined to the coloured race Lothrop and Platt,⁴ of Boston, reported two cases in brothers, white, natives of Barbadoes Their report is a fine summary of the subject

The presence of the adult worm in its favourite haunts, namely, the generative organs, and the lymphatic system, brings about a variety of symptoms, abscess, lymphangitis, varicose inguinal glands, lympho-scrotum, lymphatic varix, orchitis, chyluria, elephantiasis, and other forms of disease, from obstruction or inflammation of the lymphatics The attacks of pyrexia are thought to be due to the activity of the embryonal form or to streptococcal infection

The adult worm was first discovered by Bancroft, of Brisbane, in 1876 It is three to four inches long and the thickness of a human hair The female is larger than the male and is

* From the Out Patient Clinic, the Women's General Hospital

viviparous The embryonic form found in the blood and chyle is about 1/75th of an inch long and as broad as a red blood corpuscle It is easily found in a specimen of blood taken about midnight and stained with a polychrome stain Four and five to the drop were found in our case

It has been estimated that there may be as many as fifty million embryos circulating in the blood, with little or any ill effect to the patient The general opinion is that the embryo is transmitted after a stage of development in the mosquito, the *Culex fatigans* chiefly

It is of interest that in 1896 Patrick Manson, because of an observation on filaria by Lewis and Law, suggested to Major Ross that the mosquito might also be the intermediate host of the malarial parasite, as of course it later proved to be

The term *filaria nocturna* has been applied to the embryonic form, because of its presence in the blood at night, and this peculiarity can be reversed by altering the time of sleeping The explanation advanced is that the tonus of the capillaries is reduced during sleep and thus the embryos are able to enter the capillary circulation. Manson was able to demonstrate that when the microfilariae are absent from the peripheral circulation they are lodged in the larger vessels, especially in the lungs

The treatment of this disease, as given in the literature, is primarily surgical, any external manifestations to be dealt with in the hope of removing the adult worm, but the presence of the embryonic form in the blood after many such procedures suggests that unapproachable nests are still left, probably in the large lymphatics. Lothrop and Pratt⁴ found six mature worms in an affected testicle, the removal of which did not lessen the microfilariae in the blood Almost all forms of the arsenical compounds have been used, also carbon tetrachloride, bismuth, antimony and x-rays Some slight subsidence has been noticed in the glands under treatment but no effect on the microfilariae in the blood and lymph, as in our case

We have now in Montreal a fair sized colony of West Indians The publication of this case may serve to attract attention to the subject and bring about a search for the organism in cases of pyrexia in these people which may help to clear up the diagnosis

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A CASE OF CEREBELLAR ABSCESS*

By GEO F BOYER, M D,

Toronto

The following case is deemed to be of sufficient interest to justify the attention of the members of this society

A S, a boy of seven years, born in England, came to the Hospital for Sick Children on March 5, 1928, with a history of earache without discharge, from February 28th to March 2nd, headache of severe degree for three days, and vomiting for two days

The family history was irrelevant

The boy developed normally through infancy and childhood, had had whooping cough at one year of age, measles at five years, and chickenpox at six years The presence of previous ear discharge was denied absolutely, and, except for an occasional "cold" he was always well About the middle of February, 1928, he began to complain occasionally of a headache, and towards the end of the month he was noticed to be rather pale at times On February 27th, he had a slight earache on the right side, but the onset of the present illness was not noted as significant until February 28th, when the earache became much more severe and he was kept from school The earache gradually became still worse, and on March 1st he seemed "cold all the time." On March 2nd a doctor was called in The headache had now become severe but the temperature was normal On March 3rd, the child seemed again to be very well, complained of no headache and was brighter and happier On March 4th he vomited, but had no temperature on the following day he was extremely ill with headache, vomiting, photophobia and prostration

CLINICAL COURSE

Examination on Admission—A fairly well-

* Read at the annual meeting of the Canadian Society for the Study of Diseases of Children at Vancouver, June 29, 1928.

developed and nourished male child of about seven years of age, looking acutely ill, with head retracted, temperature, 98, pulse, 116, respirations, 24. He was conscious and complained of occipital headache. Some rigidity of the neck was present, with opisthotonos. Brudzinski's and Kernig's signs were positive. He had no undue irritability or hypersensitiveness, no motor paralysis or paresis, no strabismus or nystagmus. His optic discs were clearly defined in outline, the vessels were normal, and no oedema was apparent on careful examination. The movements of his hands and feet were not accompanied by ataxia. There were no gross changes in deep or superficial reflexes. A slight sero-mucous discharge came from each nostril. He had some carious teeth. His tongue was coated, the tonsils were enlarged and red. He had no post-nasal discharge. There was slight anterior and posterior cervical glandular enlargement. Neither mastoid process was swollen or oedematous. The left tympanic membrane was normal in colour and position, the right tympanic membrane was intact and not bulging, but was slightly inflamed. Bulging was so slight that incision was decided to be unjustifiable. Examination of the heart, chest and abdomen showed no signs of disease. The white cell count was 11,800 per cmm, with 78 per cent polymorphonuclears. Lumbar puncture showed a clear fluid with no definite increase in pressure, having 305 cells per cmm (32 per cent polymorphonuclears, 68 per cent lymphocytes). The Noguchi reaction was positive. A smear showed no organisms. Cultures were sterile at the end of 24 hours.

On account of these findings, a diagnosis was made of diseased tonsils, subacute nasopharyngitis, and otitis media on the right side, with secondary serous meningitis.

On March 6th, after examination by the otolrhological service, the opinion was recorded that he had a "very early acute otitis media of the right side with no post-aural signs whatever." A wide incision was made in the right ear drum but only serum was obtained. The child's general condition was somewhat improved. The highest temperature recorded for the day was 99.1°, pulse, 100, respirations were 22. He was given no antipyretic medication. Tuberculin skin tests were negative.

On March 7th, his general condition was

about the same, but a fine, papular, erythematous rash appeared which soon faded. The highest chart records for the day were, temperature 99.1° F, pulse, 120, respirations, 30. The next day he complained of severe headache, he was conscious, the right ear was discharging freely. Examination of his eyes showed no nystagmus and no optic oedema. Highest temperature, pulse and respirations during this day were 99.6°, 110, 24. A lumbar puncture showed no increase in pressure and a perfectly clear fluid, 29 cells per cmm (9 per cent polymorphonuclears, 91 per cent lymphocytes), positive Noguchi. The smears showed no organism, whilst cultures were sterile after 48 hours.

On March 9th his optic discs were examined by the eye service and were recorded as normal. His highest temperature, pulse, and respirations in the day were 98.8°, 100, 22. Cultures from the right ear showed pneumococcus.

The following day his condition became very much worse. He was complaining of severe occipital headache. His head was retracted but there was less rigidity and Kernig's sign was less marked than it had been a few days previous. The discharge from his right ear continued. He took fluids well and at times said he was quite comfortable. As the day went on his headache and head retraction were more marked. His highest temperature was 99.4°. Tuberculin skin tests were negative. A few cubic centimetres of cerebrospinal fluid were withdrawn by lumbar puncture, great care being taken to keep the head well below the level of the hips, this showed clear fluid, 8 cells per cmm (5 per cent polymorphonuclears, 95 per cent lymphocytes) and positive Noguchi. Smears showed no organisms and cultures were sterile at the end of 48 hours. A guinea pig was inoculated with this cerebrospinal fluid, and one month later was found to show no sign of tuberculosis.

Early in the morning of March 11, 1928, sixteen hours after the lumbar puncture, he collapsed rather suddenly and died.

AUTOPSY

An autopsy, performed a few hours after death, showed the heart to be normal. The lungs, kidneys, liver, spleen and intestinal tract also showed no signs of disease. Examination of the head revealed a normal scalp and skull. The

dura appeared healthy throughout its entirety. No exudate was apparent anywhere. The sinuses were healthy. There was no evidence of thrombosis of veins or sinuses. The cerebral convolutions were somewhat flattened. On removal of the brain, a slight pressure on the right cerebellar hemisphere caused it to burst and exude pus. This had not ruptured until disturbed. An abscess, the size of a large pigeon's egg, was present. This was situated less than one centimetre below the tentorial surface, and was more to the lateral and posterior side than in any way related to the vermis, and it was much closer to the superior surface than to the centre of the cerebellum. Section of the cerebral hemispheres showed no disease in them. The medulla was obviously jammed into the foramen magnum by an increase in pressure within the skull. The pons and medulla were apparently healthy. The mastoid cells on either side were free of disease.

Smear from the right mastoid showed no pus cells and no organisms, and cultures also were negative. Smears from the abscess in the right cerebellum showed a Gram-positive diplococcus, and on culture this proved to be pneumococcus (type IV).

COMMENT

This case shows the difficulty which may be encountered in diagnosing a cerebellar abscess, probably secondary to otitis media, without pyrexia, optic oedema, the cardinal signs of unilateral cerebellar disease, and a falling cerebrospinal cell count, and with many signs suggestive of a serous meningitis.

ANAPHYLAXIS FROM POLLEN INTRODUCED BY A BEE STING

By DOUGLAS F. GIBB, B.A., M.D.,

Oak Lake, Man.

This case is reported because it is rare indeed that one receives a pollen protein test by a natural hypodermic

The patient, a little girl of seven, was playing in her father's garden when a bee became entangled in her hair, and, in its frantic efforts to escape, stung her. On her mother's telephoning me to inquire what to do for the sting I advised

strong soda bicarbonate solution, as that was the only remedy she had at hand. Within fifteen minutes I received a second call this time to come at once. The mother, much excited, reported an almost instantaneous development of severe illness accompanied by "large lumps" over the child's body. When I arrived at their home, a few minutes later, I found the child exhibiting every symptom of a well-established attack of hay-fever. She complained of a tickling and burning in the nasal mucosa, and was sneezing continually, the sneezing being accompanied by a scanty flow of secretion from the nose and eyes. The "large lumps" which I saw were urticarial wheals, were whitish in colour, and very itchy. The catarrhal condition spread rapidly to the pharyngeal mucosa, as was manifested by the onset of coughing, which soon became quite violent and somewhat asthmatic in character.

I gave 1/1000 epinephrine solution hypodermically and sprayed out the nose with normal saline. For the urticarial wheals I used some calamine lotion which I had with me. Soon after the hypodermic the hay-fever symptoms became less severe, and the wheals began noticeably to subside. This improvement continued for about four hours, but about eight o'clock p.m. the coughing began once more to be violent. This time I sprayed the nasal passages with ephedrine inhalant, which soon brought relief. The child sank into an exhausted sleep and the next day was quite well, except for a slight feeling of nausea in the morning.

My explanation for this rather odd case is that the bee had by its sting injected into the child a pollen to which she was sensitive which produced a well-developed attack of hay fever in fifteen to twenty minutes together with the urticarial reaction, much exaggerated of course which appears in a pollen test. Previously the child had displayed no susceptibility to hay fever and was in perfect health at the time she was stung. The lawn and flower garden being her usual playground and the fact that probably all the wind-pollinated plants in the district were past the pollination stage make it improbable that she could have received the irritating protein in any other manner than from the sting. In the week that has elapsed since the attack there has been no sign of any recurrence.

Editorial

THE CHEMISTRY OF TUBERCULIN AND OF THE TUBERCLE BACILLUS

SINCE 1891, when Koch first prepared tuberculin and found that, injected into the bodies of tuberculous animals, it gave a specific reaction, it has been used in the diagnosis of this disease to an extent that is not ordinarily recognized. This extent may be gauged by the estimate, recently made, that more than one hundred million dollars' worth of cattle have been slaughtered in the United States and Canada during the last twenty-five years, because, on test, they reacted to tuberculin. It has, therefore, played a part in the economic field which Koch could not possibly have imagined. Its use in the diagnosis of tuberculosis in the human subject has been very greatly less extensive because the reaction it develops entails, not infrequently, extreme discomfort to the patient, and because also the methods of clinical diagnosis used for suspected cases obviate the necessity, in the vast majority, of resort to the reaction test.

Notwithstanding all the economic and hygienic interests thus involved, no fundamental research work has been done on the nature and composition of tuberculin until four years ago. It was, and still is, as made for the extensive use to which it has been put, derived by preparation from cultures of the tubercle bacilli in boiled beef broth, and it is, in consequence, an "omnium gatherum" containing all the proteins developed by the bacilli in the broth, as well as not a few of the constituents of the latter. This has led one critic to label it "dirty," a term perhaps too severe, but nevertheless not wholly unjustifiable. The product is not and has not been a pure one, containing only the reacting substance, but a mixture, not always uniform, and not infrequently of uncertain standardization.

The explanation for this lack of fundamental research on tuberculin in the past is not far to seek. The technical knowledge necessary for the preparation of the purest product has been of slow growth during the last thirty years, many of those who gave

themselves to work in this line were too limited in their training to achieve any outstanding result, and they merely marked time by contributions on subjects connected therewith of limited interest and evanescent value. The consequence was a "stalling" on the course of progress.

Happily a new era of achievement began about four years ago, when a number of highly qualified technologists began fundamental research, not only on the nature of tuberculin, but also on the composition of the tubercle bacilli themselves. Some of the results so far won are of outstanding importance and they encourage the hope that in a few years more we shall be absolved from the reproach of the past on this subject.

One of these outstanding results has been achieved by Dr. Florence B. Seibert, associated with Dr. E. R. Long, of the Otto S. A. Sprague Memorial Institute of the University of Chicago, who cultivating tubercle bacilli in a synthetic medium devised by Dr. Long, free from protein of any kind and containing only three organic constituents, asparagin, glycerol and citric acid, prepared two years ago from them a quantity of tuberculin, from which she isolated three proteins whose characters, chemical and physical, she determined. She found that only one of these, soluble in distilled water and, therefore, an albumin, can bring out the typical reaction in tuberculous animals. She has continued her work and has recently succeeded in purifying this protein by repeated crystallization, after the method of Hopkins and Pinkus for the crystallization of proteins, from solutions of it at a pH of 4.9. After fourteen crystallizations it gave the maximum tuberculin skin reactions and a typical tuberculin atrophy of the testicle in a tuberculous guinea pig. After the tenth crystallization less than half of it was required to give as strong a reaction as that given by the product of the first crystallization. It is easily denatured, that is, altered in its composition and properties, as shown by its loss of the

power to crystallize and also by the loss of its power to produce the reaction

This protein, apparently, is not free from the bacilli except when they disintegrate or are autolyzed. It is, therefore, an endotoxin, as is that derived from the typhoid bacilli, but unlike the diphtheria toxin which is normally secreted into the culture medium by the diphtheria bacilli. As the reactive substance derived from the tubercle bacilli is a protein, Dr Herbert regards the reaction given by it as an allergic one. If it is so, then it is difficult to explain why the reaction occurs, for tubercle bacilli must, in tuberculous animals, undergo autolysis and the protein set free should continuously give the reaction. Is this protein, which is highly toxic, denatured, once the early stage of infection is passed, by the clasmatoocytes which ingest and destroy the bacilli and thus prevent the protein from passing out from the tubercles? If the protein is constantly set free from the bacilli in the infected subject in more than infinitesimally minute quantities, why should the injection of minute portions of it bring about the typical reaction? These questions indicate that the exact nature of the reaction has still to be determined.

Of equal importance and interest are the results so far derived from the attack on the chemistry of the tubercle bacillus and on its constituents now being carried on under the auspices of the Committee on Medical Research of the United States National Tuberculosis Association. This Committee has secured the services of a number of specially qualified chemists, biologists and pathologists, who have arranged to co-operate in this attack. The extent of this organization may be inferred from the fact that three United States government divisions, eight universities, four endowed laboratories, two manufacturing chemical plants, seven volunteer health bodies, and two semi-governmental bodies are concerned in it. This research has been carried on for about two years, and, of course, has not as yet covered the whole of the field, but so far it has made very considerable progress. A

very brief summary of the results already obtained has been recently furnished by Dr W. C. White*, of the United States Public Health Service, Washington, who is engaged in co-ordinating the work of the group of workers.

A number of the unaltered constituents of the bacilli, cultivated for six weeks in the Long synthetic medium, have been isolated by Professor Treat B. Johnson, of Yale, and distributed amongst the other workers who are engaged in ascertaining their action on normal animals. These constituents are a nucleo-protein, several proteins, a polysaccharide, sulphur-containing compounds and a phosphatide fraction. The effects of injections of the proteins and of the phosphatide have been studied by Sabin and Doan of the Rockefeller Institute. The protein fractions gave markedly toxic effects, high fever, multiple hæmorrhages, and a very great increase in the number of clasmatoocytes, especially in the so-called interstitial pneumonia of the lungs. The significance of this increase in the clasmatoocytes is found in their activity in ingesting and fragmenting tubercle bacilli. The phosphatide fraction, which is entirely non-toxic, gave, on injection into the peritoneal cavity, massive local increases in the monocytes, epithelioid cells and giant cells of the Langhans type, which are special constituents of typical tuberculous tissue, and which "house" as it were the tubercle bacilli in the chronic infections. This property of the phosphatide fraction has later been shown, after a finer fractionation, to be due to a *saturated fatty acid*. What this fatty acid is has not been determined, but it must be of a kind hitherto unknown.

From all this it is evident that very great advances have been made in our knowledge of the chemistry of tuberculin and of the tubercle bacillus, and it is not too much to hope that in the next few years we shall be in a position to combat tuberculosis fundamentally and effectively.

A. B. MACCULLUM

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the mistake of trying to apply it at the wrong end, that is, on this side of the Atlantic

The results of compulsory examination had been seen before the system was adopted for all immigrants, as the plan had been in operation in the case of unaccompanied women, children's immigration schemes, and government-assisted passages to Canada, and it was found that striking results were obtained from it. In 1926, the last complete period for which figures are available, about 95,000 immigrants arrived in Canada without compulsory examination before embarkation, and the medical inspection at the ports of entry (never adequate for the detection of certain types of disease or disability) eliminated only 0.03 per cent of mental defectives, and 0.04 per cent under the head of chronic loathsome diseases. On the other hand, of 20,000 of the assisted immigrant class who underwent compulsory medical examination before embarkation, 0.75 per cent of them were declined as mental defectives, and 0.97 per cent as suffering from loathsome disease were weeded out and refused admission.

The new scheme of examination called for the appointment of Canadian medical inspectors at the various centres of embarkation, and the plan was only put into force after much consultation with officers of the British Medical Association, the British Ministry of Health, and the steamship companies. Nevertheless strong criticism soon appeared in the public press, based professedly on the ground that the proposed examination would act as a deterrent to immigration. Dr. Pagé states that the opposition was traced to certain of the shipping interests, and he holds, and rightly, that the criticism at such an early stage of the work was unfair. It is true that there

was a decrease in immigration to Canada of 12 per cent in the first three months of 1928 compared with the same period in 1927, but this fact loses its ominous aspect when it is found that in the same period the immigration from the British Isles to Australia, New Zealand and the United States showed an even greater comparative decline. No such opposition, it is added, arose when the United States adopted a similar scheme some years ago. Dr. Pagé looks forward to a steady improvement in the working of the plan. It is an encouraging sign, rather than otherwise, that even in the short time for which figures are available, there has been a decided increase in the number of those rejected as unfit.

Coupled with Dr. Pagé's stimulating account, we would call attention to the effort being made by the Canadian National Committee for Mental Hygiene towards the study of mental hygiene problems presented by incoming settlers in the West. If, as has been pointed out¹, our new Canadians are contributing more than a fair proportion of the population of our mental hospitals, our jails, and our charitable institutions "it is important that we should know the reasons." To this end, information should be collected regarding the various racial groups who come to us from other lands, about their health, their educability, their national ideals, etc.

The importance of, and, we may add, the difficulties connected with, such work, are hard to over-estimate. It will, however, provide evidence of the value of the application of medical science to the problems which beset the growth of our people.

H. E. McD

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THE QUESTIONABLE BENEFITS OF THE VOLSTEAD ACT

DOUBT appears to exist among members of the profession in the United States as to how far prohibition is furthering the welfare of the people. In a recent address before the Academy of Medicine¹ Dr. Charles Norris, Chief Medical Examiner in New York City, asks the question "Has prohibition been worth while?" Statistics at present,

according to him, would indicate that the Volstead Act has not had the beneficial action claimed for it, and that "speak-easies" in increased numbers have taken the place of the corner saloons in New York City. The supporters of the Act make statements in the newspapers that it is pleasant to contemplate the way in which the corner

saloons have been replaced by flower stores and groceries, but nobody knows how many of these flower stores and groceries have back rooms where liquor is obtainable. Many, also, who want to drink wine or spirits have become potential manufacturers. Prohibition, according to the speaker, has not only increased the amount of drinking, but has also increased the risks attendant upon drinking by supplying impure alcohol. The enforcement of the Act has cost the nation nearly 178 million dollars, while in the way of revenue the nation loses approximately a billion dollars a year. Statistics obtained from the Hospital Information Service Bureau of the United States Hospital Fund show that prohibition has not stopped the ambulance calls for cases of delirium tremens, 472 cases of which were last year removed to hospitals, and 8,102 cases of acute alcoholism were treated in the hospitals. Dr. E. Monin, in his volume on "L'Alcoolisme," a medico-social study published in Paris in 1917, makes the statement that while abstinence is ideal, the public should not demand anything but temperance. Temperance alone can create a superior and anti-alcoholic class. For the public the use of alcoholic drinks must be a question of moderation.

Another aspect of prohibition has been dealt with by Dr. Louis I. Dublin, of the Metropolitan Life Insurance Company, in a paper² published in full in the *American Journal of Public Health*, January, 1928. In this article Dr. Dublin states that the prohibition period has been characterized by sharply declining mortality rates among children and adolescents of both sexes. The improvement becomes smaller among young male adults and disappears altogether in the middle years of life in that sex. Among men the mortality rate definitely rises after the age of thirty-five. In a general way, it may be said that over half of the total population has experienced a very favourable morbidity and mortality rate during recent years. One may even go a bit farther and say that the facts are consistent with an assumption that the conditions of life during the period of the new legislation have been beneficial to a large part of the public. A little arithmetic will show that there has been a saving each year of about 14,500

children under the age of five of another 2,000 between the ages of 5 and 10, and another 1,000 between the ages of 10 and 20. This makes approximately 17,500 young lives saved in a year. At the age of childhood the greatest improvement in the death rate has taken place in connection with accidents, diarrhoeal diseases, and pneumonia. Infectious diseases have declined considerably. Among young women there has been traceable a decline in tuberculosis. There has also been a sharp decrease in mortality from puerperal causes. It would appear, therefore, that the improvement during these years is a response in some measure to the direct attack going on for years by health and social service agencies, both public and private, against the communicable diseases and against the diarrhoeal diseases of children, and may be considered a reaction to a rising standard of living. The conditions of domestic life, during the last few years, have apparently been such as to add incentive and power to the forces already at work to make for better health and longer life in these classes of the population.

While emphasizing this improvement in economic conditions Dr. Dublin is not willing to accept without qualification the suggestion that that part of the wages that under the old régime went into the liquor traffic is now diverted into channels which afford increased protection and welfare for the family. This phase of the subject is unfortunately beclouded with much uncertainty, and we know very little that can be considered as accurate with reference to the amount of alcohol now being consumed, of what is being spent for it, and, least of all, how the facts affect the various economic levels of the population. Under the heading of "An increase in male deaths due to alcoholism" he makes the statement that the improvement in tuberculosis has gone hand in hand with an increase in the mortality from pneumonia, from accidents, from heart disease and kidney disease. Since the year 1920 there has been a constant rise in the death rate from alcoholism and from cirrhosis of the liver. The picture we now find to exist in the mortality rate of adult men in the United States is entirely consistent with the observations universally confirmed of a continued widespread indulgence in alcoholic

beverages by men. The quality of liquor used throughout the country is sufficiently bad to make up for the smaller quantity consumed. There can be little question as to the unsatisfactory situation now confronting large areas of the country as regards the use of alcohol by men. Beginning with 1920 there has been a continuous and marked rise in the number of deaths resulting from the use of alcohol. The situation is in striking contrast with what has occurred in neighbouring Canada. The experience of the Metropolitan Life Insurance Company in Canada is especially instructive. Among over one million policy holders there have been recorded only one hundred deaths from alcoholism and acute alcoholic poisoning during the entire period 1911 to 1926 and on the annual basis the number of deaths from these causes is so small as to be almost negligible.

An editorial in a recent number of the *Journal of the American Medical Association*³ remarks that economists, sociologists, and physicians alike seem unable to evaluate the success of the present law relating to the consumption of alcoholic beverages. While some seem inclined more in its favour, others are rather against it, and statisticians in general are agreed that reliable facts on which to form judgment are not available. One cannot read the recent discussion of a group of eminent British psychiatrists on the etiology of alcoholism without realizing that the very nature of this social and personal demand for drink is yet to be determined. Can the craving precede indulgence or does it arise therefrom? One speaker suggested that the drinking of alcohol in excess results in the production of chemical compounds which produce a form of nervous distress that only more alcohol can relieve. Another authority equally reputable scoffs at this idea and declares that he has never been able to satisfy himself that there is any value in the treatment by alcohol of the early stages of delirium tremens. Another asserts that men do not drink until after they have made the discovery of the euphoria that results from this experience. It is, however, not by any means agreed that the desire for pleasure is the stimulus that urges men to drink. The more orthodox view as expounded by a

committee of the Medical Research Council is that the direct effect of alcohol upon the nervous system is in all stages and upon all parts of the system to depress or suspend its functions, in short, from first to last alcohol is a narcotic drug. That this generally recognized view has some distinguished opponents only serves to illustrate the lack of certain knowledge. The relatively high incidence of alcoholism in the United States cannot be explained on the theory that chronic drunkenness is invariably the consequence of a desire to escape misery. The conviction is forced upon us that these yet unsolved problems are not insoluble, they constitute a definite challenge to research.

With the object of obtaining more effective control over the prescribing and dispensing of liquor for medicinal purposes, the Commissioner of Prohibition in the United States has promulgated a series of new regulations which became effective last August. The new regulations relieve pharmacists of the necessity of making copies and keeping exact records of the prescriptions containing liquor that they are required to dispense, copies of which they were previously required to file monthly with the prohibition administrators. Under the new regulations only a brief record of the prescription is demanded. The chief labour of recording is now placed on physicians prescribing liquor, as they are required to write four copies of their prescriptions instead of two, and make monthly reports to the Commissioner of Internal Revenue instead of reporting only when their book of prescription blanks was exhausted. Although physicians are relieved of the statutory duty of returning to the Commissioner the book of stubs of used prescriptions, this concession would appear to be of little value as it is expected that the directions which the Commissioner will lay down will be no less elaborate than the formula now prescribed. According to an editorial in the *Journal of the American Medical Association*⁴ physicians will have to make their monthly return to prohibition administrators by registered mail with requests for return receipts, so that the annual outlay by the medical profession for postage and registered fees will amount to approximately \$180,000.00 a year. The *Journal* adds that the new regulations will increase the expense of the medical pro-

fession by about a quarter of a million dollars annually, and this item of cost will enter into the general expense of medical practice to be passed along and become an additional charge on the sick

A. D. B.

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CRITICISM OF CALMETTE'S STATISTICS ON THE EFFICACY OF BACILLUS-CALMETTE GUÉRIN VACCINATION

IN previous editorials in this journal the subject of vaccination of children against tuberculosis by the use of B C G, an avirulent living tubercle bacillus, has been discussed

A recent editorial in the *British Medical Journal* by Greenwood¹ has severely attacked the validity of the statistical study of the results in vaccinated children, which it must be remembered is one of the factors Calmette has employed to stress the value of his method of vaccination. Greenwood's article is a masterpiece of poignancy, telling sarcasm, and pointedness, and is well worth reading. In brief, he shows conclusively that Calmette has misquoted the literature he cites on the mortality rate from tuberculosis in non-vaccinated children exposed to contagion, these erroneous figures being used as controls with which to compare the figures obtained in his vaccinated children. Furthermore, he demonstrates that Calmette has mishandled his own figures as Greenwood succinctly puts it, "he has introduced a novel method into statistics." When one bears

in mind that Greenwood is Professor of Epidemiology and Vital Statistics in the University of London his editorial must convey much weight. If further evidence were necessary it is supplied by Rosenfeld² in Germany, who has independently arrived at similar conclusions, and has also pointed out other statistical errors made by Calmette. One of the main props in Calmette's edifice, *i e*, his statistical studies in vaccinated children has thus been proved unsound. Another prop, his experimental results in animals, has been criticized by Petroff³, who advises extensive experimentation in cattle as a necessary preliminary confirmation.

Certainly the use of this method of vaccination of infants against tuberculosis in Canada appears to be premature at this juncture.

ARNOLD BRANCH

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THE CREATINE PHOSPHORIC ACID OF MUSCLE

MUSCLE contains 0.3 to 0.5 per cent of creatine, and ninety-eight per cent of all the creatine in the body. Creatine is a fairly soluble compound, liberated very readily from minced muscle. What its function in muscle is, and even how muscle holds it and prevents its passage into the circulation, have long been puzzles. Some clues to these have recently been discovered.

Last year Eggleton and Eggleton¹ reported the presence in muscle of an unstable compound of phosphoric acid, which disappears completely when muscle enters into

rigor. They termed it *phosphagen*. Fiske and Subbarow² simultaneously found similar results, but went further and isolated phosphagen, showing that it was a creatine phosphoric acid, in which a nitrogen atom of creatine is linked directly to the phosphorus atom of the acid, a type of combination not previously found in biochemical compounds. The work has been rapidly extended by Meyerhof and his school³. They have shown that there are two "phosphagens." While vertebrate muscle contains creatine, its place in invertebrate muscle is taken by the

amino-acid arginine, closely related to it chemically. This muscle-arginine is held in exactly the same kind of phosphoric acid combination.

When muscle is rapidly fatigued the complex creatine compound is largely decomposed. Either in presence or absence of oxygen it is rapidly reformed. These changes are brought about by a specific muscle enzyme. Whether decomposition or synthesis takes place depends respectively upon whether the muscle-medium is slightly acid or slightly alkaline. Since muscular contraction at once tends to produce slight acidity through the production of lactic acid, as a result of muscular contraction free creatine is liberated. The balance of evidence favours the association of muscular work with the production of creatinine (subsequently excreted in urine) from creatine, and we know that this change takes place automatically in acid solution. Evidently the creatine phosphoric acid of muscle is constantly being decomposed and resynthesized, and the conclusion is unavoidable that these changes are functionally linked up with and functionally necessary to the carbohydrate metabolism of muscle whereby this

tissue carries on its specific function. It seems not improbable that the formation of creatinine represents the unavoidable and incidental loss of creatine from muscle involved in the frequent production of an acid medium during muscular work. Such type of loss of compounds that the body conserves as far as possible is exemplified by the constant loss of a small amount of bile acids during their passage through, and reabsorption from, the intestine. It still follows that the creatinine output in urine affords an index of muscular work and the muscularity of the individual.

Although these discoveries are so recent, they are so definite in character and have such potentialities that in the near future we may expect to obtain a much clearer insight into the whole mechanism of muscular metabolism.

A. T. CAMPION

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FOOD PIGMENTS

THE most obvious and least considered property of food, taken as a whole, is its colour. The purple, red, yellow and orange colours of fruits have been regarded as appealing to the eye and to our sense of beauty only but as having little or no food value. Efforts have recently been made by chemists to estimate the physiological significance of those food pigments that were shown to be chemical entities, but until recently hæmoglobin was the only pigmented substance in food regarded as having a definite food value. Recent investigation would indicate that carotin must also be placed as an article of diet possessing a definite influence on nutrition.

In addition to the green chlorophyll two other pigments, xanthophyll and carotin are known to be present in vegetables and fruits. Both of these are yellow substances, obtainable in crystalline form, and can be

demonstrated in corn, carrots, and sweet potato. Carotin is a hydrocarbon, while xanthophyll contains oxygen in addition to hydrogen and carbon. These pigments are always found together, although in varying proportions, and it has been shown that the carotin of milk fat, blood serum, and the adipose tissue of cattle is derived from the carotin-bearing foods which they eat. Xanthophyll, which predominates in egg yolk, is also dependent on the special food given to the fowl. While there appears to be a striking parallelism between the occurrence of vitamin A and these yellow pigments, careful studies have shown that neither xanthophyll nor carotin can replace this fat soluble vitamin in the diet. In experiments which have recently been carried out by Underhill and Mendel¹ on dogs, it was found that definite indications of malnutrition characterized by lesions in the mouth and in

the gastro-intestinal tract developed in dogs fed on a restricted ration, and that this malnutrition could be prevented and cured by feeding food containing carotin in minute amount. The results indicated a remarkable potency of this pigment for as little as five milligrammes of crystallized carotin fed daily was efficacious in removing the indications of malnutrition.

Experiments of a somewhat different character were carried out by Connor in Harvard². A solution of carotin in olive oil was injected intraperitoneally with the result that at the necropsy a month later granulomatous lesions were found in the mesentery, on the spleen,

and on the liver. A control animal injected with olive oil showed none of these reactions. These results would indicate a considerable potency of this pigment. It is suggested that carotin taken with the food may be so altered in the course of digestion as to provide a physiological essential to the organism, but when given intraperitoneally it may only act as a foreign body.

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Editorial Comments

DEATH OF LADY OSLER

News of the recent sudden death of Lady Osler, the devoted wife of the great physician Sir William Osler, has come with a painful shock to the thousands of friends and acquaintances who glimpsed the happiness and were admitted to the intimacy of the Osler's delightful home at Baltimore and later of "The Open Arms" at Oxford, during their twenty-seven years of married life. So warm and gracious was the overflowing hospitality there accorded, and so freely was this extended to all who came within its range, that a day, or even an hour, spent within its radiance stands out in the memory of all who were so privileged as a bright and sweet experience, alive with vivid human interest, the enkindling influence of which is with us still. In this truly unique side of Sir William Osler's life and activities lay perhaps his greatest gift to his generation, for through it there was diffused, as by an electric current, and in an ever-widening radius, that spirit of universal fellowship, which, even amid the turmoil of the great War, was yet the very air in which his spirit breathed.

In the exercise of this extraordinarily broad and generous hospitality in which it was ever his impulse to indulge, Sir William Osler was not only ably seconded but was carried forward to achievements beyond anything he could have encompassed alone by the magnificent organizing power and social genius of Lady Osler, whose intuitive support of his every wish and interest and warm sympathy for all about her bridged the shyness of the most timid guest, and met the complexities of the most apparently trying situation with complete ease and invariable success. From their early years in Baltimore, when the "dear Mrs. Chief" shared the student evenings

round the dining table, or carried on serenely at the tea hour with Dr. Osler's guests long after he had slipped away from them, down to the crowded days of the great War, when at 13 Norham Gardens open house was kept for practically all the American and Canadian officers who passed through England, Lady Osler was equal to every emergency. And, when the hour of trial came, bereft of their dearly loved son, "to her" (to quote Dr. Malloch's words*), "sorrowing too, but standing upright at his side, he turned for comfort and support, and she, who had been his stay and helpmate in all his work, gave him power to bear it to the end."

Perhaps, if that dreadful time of immense pressure and strain had not supervened, the integral share which Lady Osler had in the supreme consummation of Osler's life and powers would not have been so apparent to us all. In such relations the half has never yet been told nor known, and the part which such a wife with powers consecrate takes in the successful fruition of a great man's work is to be read only in the completeness of his fulfilment. Lady Osler's best epitaph lies in the universal love and reverence in which Sir William Osler's name is held throughout the world of modern medicine. Nor would she ask a greater tribute than this recognition of her own unselfish work.

Lady Osler's activities did not cease with Sir William's death. She was elected then a trustee of Evelme Almshouse (the only woman who has ever had that honour) and to the Board of Radcliffe Infirmary, and as Sir Herbert Warren writes in the *London Times* of September 4, 1928,

* Archibald Malloch "Sir William Osler at Oxford," *Sir William Osler Memorial Volume* 1926 p. 77.

"She did indeed a noble work after her two great sorrows, from which she never really recovered, by keeping open her hospitable home as an international centre, a house of call with an ever-ready welcome for so many a passing traveller, and for the constant, often almost daily, reception during term of the young students of her own country and their friends, to whom it was truly a liberal education to be admitted within its walls, a living link between the United States and the British Empire—between Old and New England."

Lady Osler (Grace Linzee Revere) was born on June 19, 1854, the daughter of John Revere and of Susan Tilden Revere, both of Boston, and was thus the great grand-daughter of Paul Revere* of American Revolutionary fame. She was married, December 28, 1876, to Dr S W Gross of Philadelphia. Three years after his decease, she was again married, on May 7, 1892, to Dr William Osler, then of Baltimore, who pre-deceased her on December 29, 1919. On December 23, 1927, she had a slight stroke, which left her with a paresis of the left side of the body and in a somewhat depressed condition. During the ten days before her death she had been rather brighter than usual, seeing many old friends who were passing through Oxford, but on the morning of August 31st, she became suddenly unconscious with signs of the onset of a left hemiplegia, and died quietly without any pain, and with only momentary discomfort, at her home at 13 Norham Gardens in the presence of her sister Mrs Chapin and Dr John Fulton of Boston. Her passing closes a chapter dear to the hearts of many, whose thoughts follow her with profound affection, and with an ever deepening admiration of a simple, unselfish, heroic spirit that counted not the cost, and herself as but worthy to "do what she could."

Lady Osler is survived by her sister Mrs H B Chapin of Jamaica Plain, Mass, and by three brothers, Mr "Joe" Revere (formerly of Sydney, Cape Breton), and Messrs William and Edward Revere, all now resident at the old Revere homestead at Canton, Mass.

MAUDE E ABBOTT

An Appreciation from an English Source

"Grace Revere, Lady Osler, born 74 years ago

* Paul Revere was of French descent, and the name was originally *Appolos Revoir*. "I was with Lady Osler and Mrs Chapin in Vienne Cathedral some years ago," writes Mrs H P Wright of Montreal, "when they found there the coat of arms of Appolos Revoir. A branch of the family moved to one of the Channel Islands, and a descendant came out to the United States and changed his name to 'Paul Revere' for convenience sake, rather offending his relatives in the Old Country by so doing."

at Boston, was the great-granddaughter of Paul Revere, the hero of the famous ride. As a young woman she married Dr S W Gross, a professor of the Jefferson Medical College, Philadelphia, and the son of Samuel Gross, the famous American surgeon. She was left a young widow in 1888, and three years later married William Osler, who, having come south from Canada, was making his famous reputation as a scientist and physician at Baltimore. For thirteen years Lady Osler was her husband's helpmate at Baltimore, then, in 1905, came the appointment to the Oxford chair, and from the moment that Osler and his wife arrived in the old University city it was seen how admirably they were fitted for what they made into a joint effort. A well known Oxford professor writes of her "She was an instant success and their home became a centre of attraction, drawing all sorts and conditions of men from every quarter of the globe, the most gifted and famous mingling with the youngest under-graduates arriving to present letters of introduction. Her house was converted into a veritable home for many of the Rhodes scholars, and not a few of these will remember with affection and respect the care she bestowed upon them, her valuable influence and her practical help—things which greatly assisted in promoting the success of Cecil Rhodes's scheme." The outbreak of war found Lady Osler in America, but she returned immediately and threw herself whole-heartedly into all the activities connected with the succour and treatment of the wounded, while owing to her influence in America, she was from the beginning able to obtain great sums of money to carry on various schemes. As is well known her only son was killed at St Julien but stricken as she was, she only bestirred herself to help with more intimate and perfect sympathy those who could not help themselves. She was an ideal companion to her husband. Tireless as she had been in promoting the interests which he had at his heart, it was felt by everyone that her appointment at Sir William Osler's death as Trustee of the Ewelme Charity was thoroughly fitting, the Mastership of Ewelme in connection with the Chair of Physic had been a medieval appointment which had made a special appeal to Sir William Osler."—(*The Lancet*, 1928, ii, 513)

STRENGTHENING THE BONDS OF BROTHERHOOD

In a recent issue of the *British Medical Journal* (1928, ii, 121) appears an article by Mr Victor Bonney, who therein gives a most interesting and thought-compelling account of his visit to New Zealand and Australia, where he went as the official delegate of the British Medical Association to the conference of the New Zealand branch. The issues that he raises are important enough to call forth editorial comment

in the same magazine, and are well worth attention also in this part of the Empire

Mr Bonney waves enthusiastic over the attractions which Australasia has to offer the visitor, and speaks also in high praise of the hospitals and medical schools of the island continent and its neighbouring Dominion. Of New Zealand, in particular, he says, "The most beautiful and varied scenery of mountain, lake, forest, and river, with volcanic phenomena which are of great interest without danger, and withal a temperate climate comparable with our own but more sunny—all these and more will well repay a visit, to say nothing of the warm welcome which the medical tourist may safely count upon from our professional brethren overseas"

Mr Bonney expresses the fear that, inasmuch as Australia and New Zealand are much nearer in distance to the United States than they are to Great Britain, and America can in some sense be regarded as the half-way house between the Antipodes and Great Britain, there may be some danger that the spiritual home of Australasia may some day be transferred from Europe to America. On this point the editorial referred to goes on to say "It must be admitted by all of us that such a transfer would be regrettable, for the people of Australia and New Zealand are of almost pure British inheritance, while the population of the United States has for some time ceased to be pre-dominantly British in blood. More and more, in all probability, will the Southern European elements in the United States assert themselves in future generations, despite the present regulation of immigration by means of quotas." To maintain, not to say, strengthen, the bonds of brotherhood in this far-flung Empire of ours is no light task, but it can and should be done. It is true that science knows no bounds, and the domain of letters has been termed a republic, yet the experience of the Great War has shown that in the last analysis the ties of blood are strongest. This fact should fill us with hope. Let us unite to maintain the British tradition in medicine. The British Medical Association, mindful of this duty, has at various times sent delegates to Australasia, South Africa, and Canada, with the avowed intention of maintaining contact and strengthening and multiplying the bonds between the profession in the centre of the Empire and that in the overseas Dominions. The results have been excellent. The visit of Dr Alfred Cox to Canada, for example, did much to bring about the affiliation between the Canadian and British Medical Associations, a bond that will be strengthened by the Annual Meeting at Winnipeg in 1930.

This, however, is not enough. The *British Medical Journal* is of the opinion that, in addition to the "personal touch", steps should be taken to improve the facilities for post-graduate teaching in Britain, so that the calls of other

countries would be less seductive. It goes on to say "The most crying professional need in this country is for a post graduate hospital and school whither not only visitors from overseas, but our own graduates, could resort for the higher medical education. In New York there is a large and well-equipped post-graduate hospital, and the Johns Hopkins Hospital in Baltimore, of world-wide fame, also offers openings to graduates. Here in London the Fellowship of Medicine is worthy of support as a co-ordinating body, but its scope is too limited at present." We would express the hope that something be done speedily to implement this suggestion.

May we hazard a suggestion? It is that a very special, even urgent, invitation be extended to our confrères in Australia, New Zealand, South Africa, and Newfoundland to visit Winnipeg in 1930 and that some of their outstanding men be asked to deliver their proportionate share of the principal addresses. They will be very welcome in Canada. Members of our Canadian profession made many friends among Australians and New Zealanders during the War and on different occasions since visits official and unofficial have been made to us by men from the Lands of the Southern Cross, to our great delight and improvement.

Let Canada on the occasion of the British Medical Association meeting two years hence figure as the "half-way house" and be the common meeting ground of Britons from the Home Land and the Dominions overseas. A C N

THE TOUR OF THE TUBERCULOSIS SPECIALISTS

It is with much pleasure that the *Journal* desires to acknowledge on behalf of the Canadian profession the generosity of the Sun Life Assurance Company of Canada in sending thirty-five of the officers of our various Tuberculosis Institutes on a travel tour to last over seventy days, and in making full arrangements for their attendance on the special conferences on tuberculosis which are taking place in several European countries as also for their inspection of the more important anti-tuberculosis institutes in England and on the continent. These officers comprise the directors and superintendents of all our tuberculosis sanatoria throughout the Dominion and include representatives from every province. The conferences which on this trip they will be able to attend in Rome, London, and Paris cannot fail to be of much educational value and should be of great advantage to them in their efforts against tuberculosis in Canada.

In sending this group of physicians over the Sun Life Association has been most generous—not only in permitting many in the party to take their wives and even their children with them but in so arranging the itinerary as to permit

intervals of rest from their professional work, and affording time to allow the party to visit many places in England and Scotland famous for natural scenery and historical association.

The *Journal* is also pleased to state that arrangements have been made with the President of the Canadian Association, Dr Jabez Elliott, to keep the readers of the *Journal* informed of all matters of general interest that may occur on the trip. On the outward voyage Dr D. A. Stewart, of Ninette, has promised to report the daily conferences on the program for the voyage. All papers of interest which may be presented at both the International meeting in Rome and at the National British meeting, which is to take place in London in October, will also be reported. We hope in this way to be able to present our readers with a full account of this unique trip, for which not only the members who are actually enjoying it but the profession generally, who will we hope reap its after fruits, have to thank the Sun Life Assurance Company. A.D.B.

THE DETECTION OF SCARLET FEVER CARRIERS BY THE COMPLEMENT FIXATION TEST

In this number of the *Journal* appears (p. 431) a valuable paper by Dr F. Green on the subject of complement fixation in scarlet fever and its importance in detecting carriers. His work was done in the laboratory of the Shriners' Hospital, Montreal, on cases both in the acute and convalescent stages of scarlet fever occurring in that institution and at the Alexandria Hospital for Infectious Diseases.

His article begins with a useful retrospect of the work done in connection with complement fixation in scarlatina, erysipelas and puerperal septicæmia, and he then details his own observations.

His series of forty cases is, of course, small, but so far as they go his investigations tend to prove that the complement fixation may be helpful in diagnosis and in the determination of atypical cases and, in his opinion also, appear to confirm the idea that *S. hæmolyticus* is the causative agent in scarlet fever.

Particularly important is his observation that a person who had suffered at intervals from sore throat, but who had never had clinical scarlet fever, gave a strong positive complement fixation test with *S. hæmolyticus*.

It was concluded that this person, an attendant in the Shriners' Hospital, was a "carrier", and this view was strengthened by the fact that as soon as she was removed further cases of scarlet fever failed to develop. So far as we are informed, this is the first time that the complement fixation test has been applied to the detection of "carriers" of scarlet fever. Dr Mackenzie Forbes' suggestion and Dr Green's care-

ful investigation of it are well worth attention. The observation, a single one, should undoubtedly be followed up, to determine more fully the value and applicability of the test for this particular purpose. Dr Green has initiated a promising piece of work. A.G.N.

STUDIES ON THE FUNCTION OF THE KIDNEYS

Some recent researches by Drs Stehle and Bourne of McGill University,* into the effects of morphine and ether on the function of the kidneys, serve to show how incomplete our knowledge still is regarding the many problems involved in the production of urine. These investigators point out that it has long been known that anaesthesia diminishes the volume of urine, and that there are data concerning the effects of anaesthetics on metabolism in general, as represented by the urine, but apparently no study has as yet been made of the effects of anaesthesia on the function of the kidneys.

They have therefore carried out a series of experiments on dogs with ether and morphine, using these drugs both separately and together, but are unable to interpret their findings on the basis of the modern filtration-reabsorption theory of urinary secretion. The action of ether, they show, is definitely to lower not only the quantity of urine, but to decrease the concentration of the urea and chlorides. It is well-known that ether causes a concentration of the blood (apparently because of the passage of plasma into the tissues), it might be expected therefore that owing to this the kidney tubules would absorb more water than usual, and so leave a relatively high concentration of urea and chlorides. But this does not happen, and it is obvious that opposed to the theory of ordinary filtration some secretory mechanism is concerned whose action is impaired by the ether.

The effects of morphine on the secretion of urine were shown by these workers to be, in general, the same as those of ether, though in less degree. When, however, the two drugs were employed in combination the surprising observation was made that the secretion of urine was decidedly less interfered with than when ether alone was given. It is suggested that a likely explanation of this is that owing to the previous administration of morphine less ether is actually used, since etherization is always more easily produced after morphine narcosis.

The paper should be consulted for full details of an inquiry which is an excellent example of the testing of physiological theories by their application to problems of clinical interest.

H. E. McD.

* *Arch. Int. Med.*, 1928, Vol. 2.

ANNUAL MEETING OF THE CANADIAN COUNCIL ON CHILD WELFARE

The ninth annual meeting of the Canadian Council on Child Welfare will be held in Ottawa, October 22nd. The executive meeting will take place at 9 a.m. The general meeting will be convened at ten o'clock and continue all day, with a short recess at noon, and terminate with an informal dinner at 7 o'clock. The President will open the business meeting with an address which will be followed by reports from the various office bearers and the reports of the several provincial sections. Among the important subjects to be discussed will be a revision of the constitution. The alternative changes now suggested will fundamentally affect the Council's organization and work, and every member is earnestly requested to study the proposed changes which have been circulated to all the members. Juvenile immigration findings will occupy entirely one session, and it is hoped that the Dominion Department of Immigration will assemble at the same time the several provincial child welfare directors and the heads of the British Juvenile Immigration society for a closed conference.

In addition to these matters, staff conferences and financial policies will come up for discussion, and will likely make this the most important annual meeting since the Council's establishment. A special effort to attend this important annual meeting is urged upon all the members.

A.D.B.

BRANDON MENTAL HOSPITAL

Report of the Royal Commission

The *Journal* is pleased to give prominence to the following item, taken from the *Manitoba Medical Bulletin*, which is self-explanatory, and to offer its congratulations to Dr. Baragar, who

has so triumphantly emerged from a very trying experience.

The Royal Commission appointed to investigate the charges laid by William Evans, M.L.A., against Dr. C. A. Baragar, Superintendent of the Brandon Mental Hospital, has recently presented a report signed by the three members of the Commission, Judge Barrett, of Carleton Place, Mr. A. W. Puttee and Mr. Thos. Sharpe of Winnipeg. The report of the commissioners was expected by all his medical colleagues as a complete vindication of Dr. Baragar. The unanimous finding of the Royal Commission is that Dr. Baragar has done a splendid piece of work in re-organizing the hospital, that he has left nothing undone to bring the hospital to a plane where the treatment and the handling of the delicate and complicated task of caring for a thousand mental patients is a credit to an enlightened community and that nothing exists to justify the slightest suspicion that the Brandon hospital and the staff are not fulfilling their duty toward their patients in a sympathetic and enlightened manner.

"Thus the charges laid on the floor of the Legislature have completely collapsed. It is unfortunate, however, that the province has to bear the expense of a Royal Commission to investigate charges which were proved to be practically baseless and that a public servant of the character and attainments of Dr. Baragar should have been placed on trial. In a fine editorial the *Free Press* says: 'The public is assured that the Brandon Mental Hospital is above reproach and that in Dr. Baragar it has a superintendent who has given himself without stint to the service of the people in handling a task from which many would recoil. It is fortunate for the people that the state is able to attach this type of citizen to the public service.'"

Extra doses of ultra violet light are not so good for plants as for animals, it appears from experiments carried on in London by E. M. Delf, K. Ratson and A. Westbrook, working at Kew Gardens and Bedford College. The experiments were undertaken with the idea of finding the possible effect of the light on plants brought from the south to northern countries where there is much less sunshine. Seedlings and older plants were given treatments with quartz mercury vapour lamp, similar to those given human beings. Germination and growth were retarded and in older plants leaf formation was partially inhibited and flower formation and bud development were held back. —*Science*, June 20, 1928.

Health Supervision of Executives in Industry—

Halsted G. Murray points out that health supervision in industry must have the approval and support of the directors of the concern. The examinations should preferably be on a voluntary basis and done if possible, at

the factory on factory time. From experience it is like the health examination, give their cooperation. The advice given in regard to living habits and rules of health and correct a large percentage of minor physical defects. Most business men have to exercise during the winter. An indirect result of examinations is that facilities for exercise are provided on company time. Men who travel are protected against smallpox and typhoid. As a result the number of colds has not with the degree of success. Colds, naturally are the most common ailment and are responsible for the greatest amount of lost time and discomfort. Adequate rest and adjustment of hours must lead to better health and better thinking. Men returning to work after illness are seen by the factory physician first. The result is that it is felt that health supervision has been enough worthwhile results to justify its cost. —*J. Am. M. Ass.*, 1928, xci, 627.

Special Correspondence

The London Letter

(From our own correspondent)

The outbreak of a mild epidemic of paratyphoid fever in the London area has led to a certain amount of agitation in the newspapers. Up to date more than a hundred cases have been notified and the disease appears to be of a very mild character. What has been alarming people is the suggestion that the organisms are being carried in cream, for since the beginning of the year the addition of preservatives to certain foodstuffs has been prohibited. This seems unlikely. The authorities are easily dealing with the outbreak, and tracking down the source of infection should only be a matter of time. But for certain other incidents it is probable that little notice would have been taken of this epidemic. In Newcastle-on-Tyne, however, a certain firm provided "lemonade" for its workers with the result that about seventy people were affected by a severe sickness from which, fortunately, all recovered. This was traced to the fact that the "lemonade" in question was made from tartaric acid which had dissolved the enamel on certain buckets, the enamel was found to contain antimony. A more serious occurrence was an outbreak of food poisoning among certain members of the London police force with one death. This was apparently due to the infection of ham with one of the food-poisoning-group of organisms, and the intense toxæmia and rapid onset in the police cases was in marked contrast to the slow beginning of the much milder paratyphoid infections. These different occurrences have, however, been confused and the result has been a cry that the prohibiting of preservatives should be cancelled, as if 0.4 per cent of boric acid in cream could have any effect on the paratyphoid organism.

In 1926 the Ministry of Health and the Medical Research Council appointed a Committee on Vaccination under the chairmanship of Sir Humphry Rolleston. Its report, recently issued, coincides with the occurrence of several cases of post-vaccinal encephalitis and it is therefore to the section on the risks resulting from the vaccination that most people have turned. The committee have investigated the problem of the relation of vaccinia to the liability to disease, either generally or specifically, and conclude that there is no evidence to suggest this, nor does vaccinia appear to aggravate a disease already established. With regard to encephalitis, however, the Rolleston Committee is unable to be so certain. While it acquits the vaccinia virus of being the sole cause of the disease it is unable to exonerate vaccina-

tion from playing some part in its causation.

The future of vaccination in this country is, to say the least, uncertain. The occurrence of fatal encephalitis is very alarming and the mild type of smallpox which has prevailed in this country for the last five years, with its almost negligible mortality, has led to a great disinclination among the public for adult vaccination, while the decrease in infantile vaccination continues. The committee urges that the smallest amount of virus necessary to produce immunity be ascertained and that this amount be introduced into one shallow incision in the epidermis. It is doubtful whether the very guarded terms of the report will carry much conviction to either medical men or the general public, and the further investigation of encephalitis after vaccination seems to be urgently necessary as a preliminary to any fresh legislation.

If anyone causes an offensive odour to permeate the air around his factory a sanitary inspector will call at once and deal with the case, armed with full legal powers. But a schoolboy on a motorcycle can make almost all the noise he likes outside a hospital and nothing can be done, short of murder, to stop him. The curse of noise is becoming serious and at the Cardiff meeting of the British Medical Association a resolution was moved and carried that the Association support any measures designed to suppress unnecessary noise. The *Times* has had a great amount of correspondence on the question during the last month and all city dwellers seem agreed that noise is a nuisance, while experts, such as Sir Robert Armstrong Jones, have pronounced authoritatively that the nervous system must be damaged by continual noise day and night. The remedies suggested are, however, so far not very definite or promising. The heavy motor vehicle, causing vibration as well as noise, seems most to blame along with the motor hooter. The latter it is argued might be abolished since it is often used merely as a safeguard by the dangerous driver. The heavy motor vehicle, so often heard at dead of night in the main thoroughfares of London, is a more difficult problem. Perhaps special by-pass roads will have to be constructed or else the "dormitory areas" of London, as they have been called, closed to such traffic. Whatever measures may be taken it is certain that the medical profession will give them unanimous support.

ALAN MONCRIEFF

London, September, 1928

The Edinburgh Letter

(An Edinburgh Correspondent)

The Annual Report of the Laboratory of the Royal College of Physicians has just been published. This laboratory was first opened in 1889 and Sir John Batty Tuke, who took an active part in initiating the scheme, was the first Curator. Dr G. Sims Woodhead was Superintendent. On his resignation in 1890 Dr Noel Paton, the present Professor of Physiology in Glasgow University, was appointed. He was succeeded by Dr James Ritchie, Professor of Pathology at Oxford University, who subsequently attained to the Chair of Bacteriology in the University of Edinburgh. The present Superintendent is Lieut Col A. G. McKendrick, I.M.S., who was formerly Director of the Pasteur Institute of India at Kisumu. From a survey of these distinguished names it will be appreciated that the Laboratory has always maintained a high standard of efficiency. Sir Robert Philip, the Curator, comments with satisfaction on the extent and quality of the work overtaken during the past year. The Laboratory has sustained a grievous loss through the death of Dr James Walker Dawson, whose researches had gained for him a high reputation among pathologists in every country. A Fellow of the College, he had been associated with the Laboratory for almost twenty years. During the year twenty-four workers had been engaged in research. Their observations relate to pathological, bacteriological, chemical, physiological and statistical problems. An investigation into the therapeutic value of trime in the treatment of tuberculosis, which the Curator started a couple of years ago, has been further prosecuted. The observations, which have been carried out, do not afford much confirmation to Takeoka's assertion that the drug is likely to be of high value in the treatment of tuberculosis. In concert with Professor Mackie, the Curator has instituted a series of experimental observations with a view to assist in the standardization of tuberculin. The Superintendent and Dr Kermack have carried to a further stage their work on the mathematical theory of contagious epidemics. The results have now been published. The Superintendent has also published a statistical examination of anti-rabic treatment in India. This was undertaken as a study of the system of statistical representation which the League of Nations will shortly apply to the statistics of anti-rabic institutes throughout the world. The report forms part of the *Festschrift* published by the *Centralblatt für Bakteriologie*, etc., on the occasion of the seventieth birthday of Professor Richard Pfeiffer. The importance of the alkaloid harmine, to the chemistry of which Dr Kermack and his collaborators have devoted so much study, is increasingly recognized. It is now claimed that yagaine, tele-

pathine and balisterine are identical in constitution with harmine. These drugs exert powerful physiological actions. Telepathine has been found to possess the properties of a local anæsthetic. The work of Drs Kermack and Slater on the synthesis of benzcarbolines in general has thus assumed an increased importance. Dr Kermack has been asked by the Chemotherapy Committee of the Medical Research Council to carry out further syntheses. Drs Kermack and Slater have conducted a large number of experiments which may lead to the preparation of compounds related to physostigmine with the view of ultimately synthesising that alkaloid and in addition in conjunction with Dr Lambie they have investigated the role of dihydroxyacetone in carbohydrate metabolism. It was largely as a result of this work that Dr Lambie was recently awarded the Lister Fellowship of the Royal College of Physicians. In particular they have attempted to ascertain whether glycogen is formed more readily in the animal body from dihydroxyacetone than from dextrose. Dr David Orr has throughout the year devoted his whole time to an investigation of the pathological changes that are found in the nervous system of animals which have received intravenous doses of bacterial emulsions. The research on pulmonary diseases in children by Dr Charles McNeil has been continued while Dr J. S. Fraser continues his important work on the pathology of deaf mutism. These are merely a few of the numerous experiments which are being conducted showing that the tradition of efficiency is being worthily maintained under the direction of Sir Robert Philip and Lieut Col McKendrick.

Sir Robert Philip has been awarded the Trudeau Medal, which is given annually for the most meritorious contribution to the knowledge of the cause, prevention and treatment of tuberculosis. Sir Robert is a past president of the Royal College of Physicians of Edinburgh, and the first occupant of the Chair of Tuberculosis in Edinburgh University. His work on tuberculosis, and especially in connection with the Royal Victoria Hospital for Consumption and Southfield Sanatorium, has gained him a wide reputation as an authority on the subject. He is at present President of the British Medical Association. If anything were necessary to enhance the honour conferred by the award of this distinction, it could be found in the associations that the name Trudeau must have for any citizen of Edinburgh. It was to that great physician that the great son of Edinburgh, Robert Louis Stevenson, went in search of health in 1887. And it was at Saranac, in the quiet of the Adirondacks, that he began the "Master of Ballantrae" and completed the inimitable "Wrong Box."

The Edinburgh Royal Hospital Sports and

Garden Party were held recently. A notable visitor was Miss Lennox. She is the oldest member of the nursing profession in Scotland. In 1856 she went out to South Africa as a nurse. In 1861 she made a second trip to South Africa with the University Mission. On proceeding up country with a party to join Bishop Mackenzie, Nurse Lennox was accompanied by Miss Livingstone. At the mouth of the Zambesi River they met the celebrated explorer Dr David Livingstone, who gave them the news of the Prince Consort's death. On returning to England, Miss Lennox joined the staff of the St Thomas' Hospital under Florence Nightingale, and was appointed sister in charge of the Accident Ward. She was one of the five nursing sisters under Mrs Debble who were sent from St Thomas' Hospital to Netley in 1868 to form the original Army Nursing Service. Part of their uniforms consisted of a short red cape, and Miss Lennox still preserves the one she wore as one of the first six army nursing sisters sixty years ago. A year ago when the Scottish National War

Memorial was opened, Miss Lennox was presented to the Prince of Wales, and later in the day, to their Majesties the King and Queen. Miss Lennox has many letters written to her by Florence Nightingale and other relics and memorials of "the lady with a lamp." Another of the original six nurses of the Army Nursing Service, Miss Strong, lives in Edinburgh, quite close to Miss Lennox. One is forced to the reflection that those early nursing sisters must have been remarkable women. Florence Nightingale lived to the age of 90 and Miss Lennox, in spite of her great age, in addition to being very bright and alert, is able to read large writing without glasses and has not the slightest trace of deafness.

Dr R M M'Kenzie Johnston has intimated his resignation as a representative of Edinburgh University Court on the Curators of Patronage, and the Court have elected Sir Norman Walker to the vacancy.

GEORGE GIBSON

23 Cluny Terrace, Edinburgh

British Medical Association

ANNUAL MEETING, CARDIFF

BY GEORGE GIBSON, M.D.,

The annual meeting of the British Medical Association is past and gone, leaving a memory of an interesting and instructive week that added to one's store of pleasant memories and removed certain definite misconceptions. In the minds of many, prior to the assemblage, Cardiff must have existed as a third-rate town, black with the smoke of factories and dirty with the dust of coal-pits. How different was the reality! We found in South Wales a fair capital with wonderful public buildings gleaming white under bright skies, a clean, modern, shumless city with fine open spaces and thoroughfares planted with trees.

The activities of the meeting centred around Cathays Park, which along with the Castle is the chief glory of Cardiff. Here are the Law Courts, the City Hall and the National Museum of Wales, and further north the University College and the graceful War Memorial. These public buildings are constructed in a certain uniformity of design that has resulted in a pleasing harmony, at once a successful and striking feature. Built of Portland stone, which in the clear atmosphere of Cardiff weathers to a silvery whiteness they presented a pleasing appearance to the visitors from the more grimy cities of England and Scotland. Cardiff might have been specially designed for a meeting of the Association.

The comfortable classrooms of the University College were particularly well suited for the meetings of the scientific sections while the receptions and entertainments in the City Hall and National Museum were held under most happy circumstances. In the afternoons excursions were arranged to visit scenes of interest, such as the docks and the various Welsh castles in the neighbourhood. On July 26th a garden-party was given in the grounds of Cardiff Castle by the Most Honourable the Marquis of Bute, K.T., and the Marchioness of Bute, which had a special interest as it formed part of the celebrations in connection with the coming of age of their son, the Earl of Dumfries.

Sir Ewen Maclean, F.R.C.P., the President of the Association, in his presidential address on "Some reactions and a retrospect," spoke of the "veritable pageant of advancement in the science and art of surgery." He dwelt on the growth of knowledge from the days of ancient Chinese medicine and the advance in learning in the field of medicine since the last meeting in Cardiff in 1885, emphasizing the work of the British Medical Association for the public good and pointing out with considerable care that the power and influence of the Association was not expended in the personal interest of its members, but that since its foundation the Association had been concerned chiefly with the maintenance of a high professional standard in education and conduct, the promotion of scientific research and the development of a national health policy.

In this connection Sir Ewen recalled the fact that it was the British Medical Association which first suggested long ago that a special department of Government should be created to deal with matters of public health a suggestion that finally brought about the establishment of the Ministry of Health and traced the responsibility of the creation of a School Medical Service to its recommendation. In reviewing the progress of medical knowledge and research during the forty-three years since the Association last met at Cardiff the speaker alluded to the vast saving of human suffering and the prolongation of human life which were results of that progress. He referred particularly to the advance in knowledge in bacteriology, biochemistry and endocrinology and to the fact that tuberculosis, diabetes and pernicious anemia had lost much of their former terror for humanity. While the fall in puerperal sepsis and mortality has been appreciable it has not been proportionate to that of the general nor of the infant death-rate. As a gynecologist and obstetrician Sir Ewen Maclean's statements should carry great weight with the public and with the recently appointed Departmental Committee of the Ministry of Health. He concluded his address by suggesting that the Association should interest itself in the subject of post-graduate teaching, a problem of vital interest not only to ourselves but to members of the profession coming from overseas.

The Representative Meeting which took place before the commencement of the ordinary meeting was productive of several interesting discussions, resulting in the adoption of various important resolutions. A motion was brought forward by Dr C. E. Douglas of Fife that the Association should give full support to the *Association professionnelle internationale des Medecins*. This is an international organization comprising already thirty-three countries. Through this channel the British Medical Association could be brought in contact with the League of Nations through the International Labour Offices. This motion by Dr Douglas was carried by a considerable majority, thus reversing a decision previously carried by the Council.

The Treasurer (Mr Bishop Harman) moved approval of the Council's Annual Financial Report in which it was stated that the revenue from subscriptions owing to the increase in membership, was greater this year than last by the sum of £3,000. The *Journal* also showed an increase of £2,000 in revenue, arising from the increased value of the *British Medical Journal* as an advertising medium.

Sir Robert Bolam moved the report of the Council on the department of "Building." He described the alterations and improvements that are taking place at the Association's premises

at Tavistock Square, London, and explained the situation in relation to the Scottish House in Edinburgh. The latter has been enlarged by the acquisition of an adjoining house, in order to accommodate meetings of large societies and such gatherings as are likely to take place in the Scottish capital.

In connection with the great increase in treatment by ultra-violet rays there was an interesting exchange of opinion on the subject of the registration and supervision of untrained and unqualified persons undertaking the administration of electrical treatment. A recommendation of the Science Committee that suitable courses should be organized, and that only persons who have satisfactorily followed such a course should have their names placed on an approved roll was carried by a large majority.

A resolution suggesting the establishment of the periodical medical and dental examinations of all persons insured under the National Health Insurance Acts was favourably considered. There was a very interesting discussion on the subject of the installation of Paving Centres for advice and instruction in infant hygiene. Such centres have been set up in Chelsea and elsewhere and people who are willing to pay five guineas (\$26) per annum for each child may obtain the same sort of advice that is provided in the Infant Welfare Centres of the various local authorities. It was pointed out that infant clinics for the poor had already done a vast amount of good and that if guidance was refused to the suggested clinics they would probably still go on, and possibly on unsatisfactory lines. The clinics were intended to supply advice for healthy children, those who were found unhealthy would be sent to their family practitioners. The proposal was opposed on the grounds that the general practitioner was the responsible medical adviser, that with his intimate knowledge of the home circumstances, he was in the best position to give advice and guidance as to training and care. It was often difficult to say where treatment began and where hygiene ended. An amendment disapproving of these centres providing consultations and advice for mothers and young children belonging to classes of the community who are quite able to consult their own family doctor was carried by a very large majority.

Sir Ewen Maclean, Chairman of the Committee on the Causation of Puerperal Morbidity and Mortality, moved the adoption of the report on that subject. The original reference to the Committee was "to consider and report on the causation of puerperal morbidity and mortality and on the administrative action, if any, that should be taken in connection with the matter." The Committee had received valuable information from various quarters, and the treatment of the subject was being closely watched both by

interested bodies in this country and by colleagues overseas, who found themselves face to face with the same important problem. In the course of the proceedings an important conference had been held with representatives of practically every body, statutory and otherwise, directly concerned with the problem. Two committees had been set up by Government, one to consider the working of the Midwives Act, and the other to consider the application to maternal morbidity and mortality of the medical and surgical knowledge at present available, and to inquire into the need and direction of further research work. In addition to these two Government Committees, however, a committee of the British Medical Association was still needed to receive all possible information on this subject and to safeguard the interests of the profession. Moreover, it was pointed out that figures from the maternity departments of the great hospitals in London, Glasgow and Birmingham showed a reduction in mortality of from 4 to 1 per 1,000 cases. The report was generally approved.

A motion by Mr David Lees (Edinburgh) to secure the proper control and treatment of venereal disease by conferring on medical practitioners and local authorities a power of placing a "compulsory" on all persons infected with venereal disease was negatived by a large majority.

The scientific sections of the Association were well attended. There was an interesting discussion on the subject of Volkmann's "Ischæmic Contracture," which was opened by Sir Robert Jones, and was of special significance in view of the recent decision of the Assize Court in the case of Tyndall v Alcock. A joint session of the Surgery and Radiology sections discussed "The fallacy of x-rays in abdominal diagnosis." In the section of Mental Diseases and Neurology, Professor W Weygandt, of Hamburg, read a paper on "Autotoxæmia as a factor in the causation of the psychoses."

The Annual Dinner of the Association was well attended, five hundred persons including ladies, sitting down, under the presidency of Sir Ewen Maclean. On the following day a congregation of the University of Wales was held when the degree of Doctor of Laws *honoris causa*, was conferred upon Dr H B Brackenbury, Sir Thomas Lewis (London), Sir Robert Philip (Edinburgh), Dr W W Chipman (Montreal), Sir George Syme (Melbourne), and Dr Franklin Martin (Chicago). Among Canadians who were at the meeting were General Bukett, C.B., Dr A D Blackader, Dr W W Chipman, and Dr J D Adamson.

Provincial Association Notes

ANNUAL MEETING OF THE PROVINCE OF QUEBEC MEDICAL ASSOCIATION

This Association had a very successful gathering at Sherbrooke on September 18th, which was attended by some three hundred physicians from various parts of the province. Both the English and French profession were represented, and foregathered in a way that was of very happy augury.

The first part of the morning was taken up with clinics, operations, and practical talks at the St Vincent de Paul General Hospital. Surgical operations and discussions of operative technique were conducted by Drs Ledoux, Bertrand, and Gaudet. An eye, ear, nose and throat clinic was given by Drs McCabe and Plante. Infantile paralysis, Border's treatment, x-rays and diathermy were discussed by Dr F A Gadbois. The importance of pre-natal examinations and their bearing on gestation and prognosis was well presented by Drs H C Cabana and A A Migneault. Drs Cabana and G L Favieau, at the Anti-venereal Dispensary No 5, gave practical instruction in the staining and examination of material for gonococci, and also on the preparation of intravenous injections

and the technique of their administration. They also discussed the complications and treatment of gonorrhœa, and showed patients demonstrating the results of treatment in the various stages of syphilis. Dr R L Duberger demonstrated some of the most important chemical tests in connection with the blood and urine.

The principal addresses were given later in the morning by Dr C Jeannin, Professor of Obstetrics in the University of Paris and Dr F Lahey of Boston. Professor Jeannin's subject was "Eclampsia," which he developed very thoroughly. It is expected that the full text of his most valuable address will be published in the next issue of our *Journal*.

Dr Lahey discoursed on "Abdominal surgery and the general practitioner." He pointed out the importance of diagnosis in abdominal conditions, for most cases requiring operation were first seen by the general practitioner. The final result depended very frequently on his alertness. Dr Lahey referred in some detail to the most commonly met with abdominal disorders.

In dealing with gastric and duodenal ulcer Dr Lahey considered that from a diagnostic standpoint both were the same. In both, pyloric spasm was the cardinal feature. The differential

diagnosis from other painful abdominal conditions was dealt with and its importance emphasized. Only by accurate work could the propriety or otherwise of surgical intervention be determined. Unless in an emergency the treatment was essentially medical at least at first. Three points were insisted on: absolute rest in bed for three weeks, a sippy diet and sufficient alkali to neutralize the attendant hyperchlorhydria. After apparent cure the patient should remain on his special diet for one year. In cases where it was impossible to maintain this regimen either on account of the lack of co-operation on the part of the patient or the exigencies of his occupation, operation might then be considered. There was a difference of opinion among surgeons as to the relative advantages of partial resection of the stomach and gastro-enterostomy. The latter was an operation of drainage and the disadvantage was chiefly in the tendency to the formation of new ulcers in various parts near the anastomosis. Dr. Lahey expressed his preference for gastro-enterostomy and thought that partial gastrectomy should be kept for the cases associated with bleeding that could not be controlled by other measures.

Cholelithiasis was then discussed. This condition always called for operation, as when stones were not removed serious organic changes always supervened. Emphasis was laid on the necessity of exploring the common duct in order to determine the presence there or otherwise of other stones, which were often there when least expected. If stones in this situation were overlooked symptoms would continue.

Persistent painless jaundice, with dilated gall-bladder in the vast majority of cases meant cancer. Operation then was not indicated except as a palliative measure. Usually the disease had progressed too far to be eradicated.

Dr. Lahey regarded the common diagnosis of "chronic appendicitis" with considerable scepticism. This affection was not nearly so common as it was thought to be. This diagnosis should never be made unless there was a clear history of an acute attack of appendicitis, followed by persistent soreness in the right side of the abdomen. Many operations done under this erroneous diagnosis were futile.

Dr. Lahey also spoke briefly on the subject of double hernia and of the merits and demerits of the various operations devised for the relief of this troublesome condition.

The afternoon was devoted to entertainment, there being golf, afternoon teas for the ladies, and a very pleasant trip on Lake Memphremagog.

In the evening a banquet was held at the Frontenac Hotel, at which more than two hundred and fifty physicians were present. Dr. Gordon Hume, the President of the Sherbrooke

Medical Association, was master of ceremonies. The principal addresses were given by Dr. C. F. Martin, Dean of the Medical Faculty of McGill University, and Dr. L. G. H. Harwood, Dean of Medicine in the University of Montreal.

Dr. Martin commenced his remarks by wondering if all the doctors present realized the great opportunity offered in this province to the medical profession through having the two great schools of medicine centred here, the one French and the other English. The two had a different technique and a difference in their methods of approach to teaching but he could vouch for the fact that the English school respected the French method and he believed the same *mutatis mutandis* was the case with the French doctors. With all the facilities we have in our schools of medicine we could lead the Dominion if we would only work together in accord and co-operation. We must have greater trust in each other. The English doctors agreed that there must be no encroachment on the autonomy of the French-Canadian medical profession and, granting that, there was no reason why we could not together do very great things. He was surprised to see that after one group of doctors had formed an association of industrial medicine another group had formed another association. He did not express himself in favour of either one of these groups but what he did want was to see the two united.

Dr. Martin thought that at the present day too much stress was laid on laboratory methods and that the old-time clinical methods of examination and the careful taking of case-histories were being neglected, to the detriment of the patient. In closing he declared that the Province of Quebec was apt to languish under an inferiority complex which must be overcome if the greatest good was to come to the medical profession here.

Dr. Harwood expressed complete agreement with Dr. Martin in his view that too much emphasis was placed on laboratory examinations and on the necessity of greater co-operation in medical work on the part of the two races.

After the banquet was over the assemblage adjourned to the City Hall where the business matters were transacted. The President, Dr. J. Stevenson, of Quebec, was in the chair. Apart from the election of officers, only two matters of importance came up. Dr. G. Stewart Cameron, of Peterboro, Ont., was present, as representing the Canadian Medical Association in bringing to the attention of the Quebec men the proposed institution of a Canadian College of Physicians and Surgeons. It was not proposed that action on this matter should be taken at once, but it was brought forward merely for information and consideration. Dr. Cameron explained that the proposed college was for the purpose of enabling the giving of post-graduate diplomas

in Canada for Canadian doctors. At present it was pointed out Canadians have to go to the United States and elsewhere for recognition of special excellence and the new body would conduct post-graduate examinations itself without interfering with the training of medical students under provincial regulations. When it was made clear by Dr Cameron and Dr Stevenson that examination for the post-graduate diploma of the college would be conducted in both French and English, and that the French universities would be given adequate representation on the Council of the College, the proposals seemed to meet with general favour. Drs L. T. Paireau and P. Z. Rheame, of Montreal, supported the idea effectively.

The recently amended Workmen's Compensation Act then came up for discussion. Dr Côté outlined the provisions of the new law, which was now effective, and Dr J. E. Belanger, of Lauzon, endeavoured to explain its operation. After a very animated discussion, during the course of which much dissatisfaction with the law was expressed by some of those present, the meeting dispersed without any action being taken.

Under the circumstances it would appear wise to give here some additional information on this matter.

The Quebec Workmen's Compensation Act has been in operation since September 1, 1928. So far as can be judged from its provisions, as well as from the new tariff of medical fees, it seems to indicate distinct progress in labour legislation. The Commission appears to be strong without being unwieldy, and the choice of Dr J. E. Belanger as its Chief Medical Adviser meets with the unqualified approval of the medical profession of the province, and particularly those who have already had dealings with him in his capacity of President of the College of Physicians and Surgeons of the Province of Quebec. In the successful administration of the Act the Commissions have asked for the full co-operation of all the members of the medical profession of the province, and have assured them that they will not countenance any attempt on the part of the various groups to exploit the Act. The new tariff, if anything, is on the side of generosity, and Dr Belanger and Dr Vézina are to be congratulated for the care they have taken in its preparation to meet all contingencies. Notwithstanding the noisy criticism of a small and relatively unimportant group at the annual meeting, the overwhelming sentiment of the members of the Province of Quebec Medical Association, as well as of the members of the Industrial Medical Association of the Province of Quebec and the Association Canadienne de Médecine Industrielle, which met the same day, was strongly in favour of giving the Act a fair trial and supporting it in every way possible.

The best advice that can be given our professional brethren in the Province of Quebec is to continue to display the traditional respect for constituted authority for which Quebec is noted, by supporting the Workmen's Compensation Commission, and assisting them in every way possible, and by refraining from criticism, if things do not all work smoothly during the first year, to have patience, and remember that during our early years we all fell many times before we learnt to walk.

Before closing a note of warning should be sounded. If certain of our professional brethren are expecting to feather their nests with the proceeds of unjust and exorbitant fees they will be disappointed. It must be clearly understood that while the medical profession will play a large and important part in the administration of this Act, and in fact will collect about 20 per cent of money expended directly or indirectly by the employees, this Act, as well as all Workmen's Compensation legislation, is put through at the instigation of and for the benefit of the working man, and that as the present Provincial Government did not hesitate to eliminate the legal profession from the Act it would, if the medical profession do not play the game, take measures to institute some form of state medicine to handle industrial accidents. We have, however, confidence in the good sense and honesty of the bulk of our profession, and do not consider that there is much danger of this occurring. We wish the new Commission and our confidant Dr Belanger success in their thankless and difficult task.

The following officers were elected for the ensuing year: President, Dr B. Bourgeois, Montreal; Vice-Presidents, Drs E. C. Cross, Three Rivers, P. C. Dagneau, Quebec, and H. C. Cabana, Sherbrooke; Secretary, Dr Léon Gauthier, Montreal; Treasurer, Dr T. Trottier, Montreal.

THE INDUSTRIAL MEDICAL ASSOCIATION OF THE PROVINCE OF QUEBEC

The growth of interest in industrial medicine is shown by the formation of the Industrial Medical Association of the Province of Quebec. This originated in a meeting of physicians interested in this work, which was called by Dr C. F. Martin, Dean of the Medical Faculty of McGill University, in January of this year. The original idea of the meeting was to organize an extensive course for those interested in industrial hygiene. The Universities of Laval and Montreal were asked to send delegates with a view to obtaining their support and co-operation in the scheme.

The Association was organized, with Dr A. R. Pennoyer as the President, but no further meet-

able solution of the problem he threw out a few suggestions "Of only one thing I am certain," he concluded, "and that is that the solution should be sought and found within the profession, and not some scheme forced upon us, which will injure our prestige, cripple individual initiative, and cease to attract to our medical schools the idealistic and visionary students who have always been the leaven of the profession."

Dr E A McQuade, President of the Ontario Medical Association, brought fraternal greetings from his organization. This act of courtesy from the Ontario body and Dr McQuade's brief but witty remarks were greatly appreciated.

The afternoon was devoted to diagnostic clinics: one on syphilis, eczema and malnutrition in children, by Dr F F Tisdall of Toronto, one on elephantiasis of the leg in a 16-year old boy, one on prostatic obstruction by Dr Roscoe Graham, and a medical clinic by Dr J C Meakins.

In the evening Dr Harry Lewis gave a dinner to the eastern guests and the executive committee at the Manitoba Club.

On Tuesday morning Dr Primrose gave an interesting paper on "Tumours of the breast," the discussion being led by Dr W J Harrington of Dauphin. The next hour was devoted to infantile paralysis, a timely topic on account of the prevalence of an epidemic in the city, with more than one hundred and sixty cases and thirteen deaths.

Dr F F Tisdall differentiated between the form of the disease which is accompanied by gastro-intestinal disturbances and the true paralysis. The rapidity of development was a difficult factor in checking the disease. On the first day the patient manifested only the ordinary symptoms of most infective processes, but poliomyelitis patients, even from the start were characterized by a peculiar appearance. The eye took a glassy look, the patient was somewhat dazed and at the same time nervous. On the second day there was usually stiffness of the neck and back and within two to four days paralysis of the muscles set in. It was rare for paralysis to start after the seventh day, and death usually came within seven days, if at all. The drowsy patients were in less danger of death than the lively ones. He commended the Manitoba physicians for their prompt use of convalescent serum. Muscular injections were safer and advisable in the early stages, but when the disease was advanced quicker action could be obtained by spinal injection.

Dr Tisdall stressed the need of medical attention during the acute paralytic stage of the disease. One third of hospital cases were due to faulty care. The arms should be kept strapped up and the legs straight. He warned against massage in the acute stage. It did more harm

than good as no strain should be put upon muscles infected by the poliomyelitis virus. Electrical treatments of any kind were valueless.

Dr J M McEachern opened the discussion with a description of the present outbreak in Manitoba. It was slower in development than usual. Paralysis did not set in so quickly, but took from two to five days. Twitching of the limbs indicated the start of paralysis. In the early stage patients showed a distinctive appearance which Dr McEachern described as dazed but lively. Serum showed an immediate effect in reducing temperature and medical men here were convinced that it has a deterrent effect on paralysis.

Dr O J Day believed the disease which was accompanied by gastro-intestinal upsets, but did not reach the paralytic stage, should not be called poliomyelitis. Every year there was a slight outbreak of this with a few cases of paralysis but this year it had grown to the epidemic stage. He agreed with other speakers that contagion by contact was proved in the present outbreak.

Dr A A Murray described the apparatus used in the treatment of paralysis. The muscles should be relieved of all strain and this required constant medical attention. The limbs should be adjusted to take the strain off the affected parts. In the case of paralyzed arms the patient should be kept strapped for many weeks, and where the legs were paralyzed patients should not be allowed to walk for months. Many hospital cases were due to relaxing treatment too soon. There was hope of improvement in muscles for two years after the onset of paralysis.

At 11 o'clock the session adjourned to see a motion picture at the Orpheum Theatre on "Effects of radiation on cancer cells." This film was prepared under the direction of Dr Cantu of St Bartholomew's Hospital, London, and was presented by Dr J Miller, Director of the Richardson Laboratories, Queen's University. He also discussed the technical phases of the new radiation treatment. It is hoped that Prof Miller may be induced to show the film again in Winnipeg on his return from the Pacific coast.

Following luncheon, Dr Ross Millar conveyed greetings from Hon Dr J H King, federal minister of health and asked for the close co-operation of the Association in the fight against the drug traffic and the abuse of narcotics. Dr Harvey Agnew mentioned that there are 550 hospitals in Canada, with a capacity of 52,000 beds and a budget maintenance of approximately \$50,000,000. The building budget was the same in proportion to the population as in the United States, where it amounted to about \$1,000,000 per day. The great need at present was for greater hospital accommodation.

President, Dr F H Huilburt, North Battleford, First Vice-President, Dr W A Dakin, Regina, Second Vice-President, Dr E R Myers, Saskatoon, General Secretary-Treasurer, Dr A MacG Young, Saskatoon Dr J B Ritchie, of Regina, was re-elected as the Asso-

ciation's representative on the Anti-Tuberculosis League Board Dr Lillian Chase, Regina, Dr T W Walker, Saskatoon, Dr Gordon Young, Moose Jaw, were named as our representatives on the Editorial Board of the *Canadian Medical Association Journal*

Medical Council of Canada

THE ANNUAL MEETING OF THE COUNCIL

The sixteenth annual session of the Medical Council of Canada was held in Ottawa at the Chateau Laurier on September 5th Out of a total Council of thirty-three representatives there were twenty-nine present this year, a record attendance

The following answered the roll call

Governor-in-Council representatives Dr P A McLennan, Vancouver, Dr W A Thomson, Regina, Dr H A Lafleur, Montreal

From British Columbia Drs Seldon and Bonnell Alberta Drs H McGill and W S Galbraith Saskatchewan Drs A M Young and D S Johnstone Manitoba Drs Thornton and Rogers Ontario Drs W Spankie and Argue Quebec Dr A Simard New Brunswick Dr Van Wait Prince Edward Island Drs MacMillan and Tanton Nova Scotia Dr MacDougall

From University of Alberta Dr D G Revell University of Manitoba Dr S W Prowse University of Western Ontario Dr J W Crane University of Toronto Dr J M MacCallum Queen's University Dr J C Connell McGill Dr C F Martin University of Montreal Dr L deL Harwood Dalhousie University Dr J Stewart The homœopathic profession was represented by Dr Morgan of Montreal, Dr Becker of Toronto, and Dr J P McCormick of Edmonton

Resolutions of condolence in the cases of the deaths of Dr Normand of Three Rivers, and Dr Warburton of Charlottetown, members of the Council who had died during the past year, were duly passed and recorded by a silent standing vote of the Council

The president, Dr Spankie of Wolfe Island, addressed the Council in general terms, and the Registrar, Dr R W Powell, of Ottawa read his report to Council as to the activities during the preceding twelve months The Council then proceeded to transact the necessary business pertaining to its functions, such as the creation of

examining Boards for the ensuing year and the fixing of the centres for the examinations of candidates in 1929

At 2 pm a delegation from the Canadian Medical Association was received, consisting of Dr E S Ryerson of Toronto University, convenor, Drs Parizeau, Ramsay, Simpson, Austin and G Young The object of the delegation was to place before the Council a proposition which has been under consideration for some time, having as its object the formulation of a scheme of procedure to unify the examinations required now from candidates, whereby they could present themselves for a single examination for their degree and their license and so lighten their burden, financially and otherwise This complicated proposition was advanced at this stage in order to secure if possible the sympathetic consideration of the Council on the principle The delegation was accorded a respectful and sympathetic hearing and it was assured by the President that its representations would receive earnest consideration Later, it was decided that the time was not opportune to move in the matter Boards of examiners were appointed to conduct the examinations fixed for June 6, 1929, at eight centres from the Pacific to the Atlantic, and for October, 1929, at Montreal in English and French, and at Winnipeg in English, following the practice for the last few years in that regard The officers of the Council were then duly elected upon a report of the Nominating Committee as follows President Dr G C Van Wait, Fredericton, NB, Vice President Dr W Rogers, Winnipeg, Registrar Dr R W Powell, Ottawa, Auditor Geo L Blatch, Ottawa, Bankers Canadian Bank of Commerce, Ottawa The next meeting of the Council was fixed for September 4, 1929

The customary votes of thanks were passed and tendered to the various universities, hospitals, etc, from whom the Council had received such assistance and courteous treatment during the past year The session then adjourned after the rendering of the National Anthem

Special Articles

ULTRA-VIOLET RADIATION FOR THE GENERAL PRACTITIONER

By R. KING BROWN, B.A. M.D., D.P.H.

(IV)*

"In my last article I dealt with the sources of ultra-violet radiations, and to those who peruse it it will be evident that for the general practitioner the weight of evidence seems on practical grounds in favour of the mercury vapour lamp, at least to begin with. It is cheap to run on account of the low amount of current required, and the exposures must be short since the output of ultra-violet rays is very large compared with those producing light and heat, and this enables a larger number of patients to be treated within a given period. It is advisable to have a supplementary source for heat rays, both visible and invisible, but this is not absolutely necessary, since the heat of the room in summer time will be sufficient and in the winter the room can be heated by a gas fire.

"Coming now to the practical application of our theoretical consideration, the following is intended to apply to the mercury vapour lamp, but can be used also for the arc lamp by lengthening the exposures to the latter according to the amperage of the lamp which regulates the intensity of the output. One must also bear in mind that the intensity varies inversely as the *square of the distance* from the source of light, so that if you double the distance you only get a fourth of the intensity. Before commencing, one must decide whether the light bath is to be general or local, or whether you are going to give merely a mild stimulating dose—called by Thederling a 'light douche,' or a medicinal dose, *i.e.*, one which will produce a mild or severe erythema.

"If you intend to give a general bath, the patient should be stripped with the exception of a pair of bathing drawers, and the eyes should be protected by dark glasses. A good distance to commence with is one metre or a yard. The first exposure should never exceed *one minute* front, *one minute* back, and *a half to one minute* on each side of the trunk, but much will depend on the condition of the patient, especially in regard to pigment. Very fair patients or albinos must have a minimal dose—indeed half this in albinos. If, however, a patient has a brownish or olive complexion, showing a likelihood of being a good pigmenter, the first bath may perhaps run to $1\frac{1}{2}$ minutes all round. Should this first exposure produce no signs of an erythema the next bath may follow in a couple of days, and the exposure may be doubled. Should an

erythema occur, however, the second bath should not be given for four days, or until the erythema has completely disappeared. After this has happened, the times in the second bath may safely be doubled.

"It should be remembered, however, that the length of the second and subsequent baths depends entirely on the reaction of the patient's skin to the first bath, and it is always a good plan to use this as merely a trial run, to find out the sensitiveness of the patient's skin to ultra-violet rays. After doubling the second bath, the following baths may be increased by one minute each time up to about five minutes front, five minutes back and about three minutes on each side.

"As to the number of baths a week, as a rule two are sufficient, and it is not necessary to produce an erythema every time. In special cases one may exceed the five minutes, but this is not as a rule necessary or advisable. It is better as a general rule to decrease the distance down to two feet or less as soon as the resistance of the patient is well established.

"Another point to be borne in mind is that the light, as previously stated, acts very like a vaccine, and is followed in the next day or two by a negative phase. The dose, therefore, should not be repeated till this is quite over, and the immunity is at its height, which will be in from two to five days, according to the degree of erythema produced. In some patients, especially the middle-aged and old, this is accompanied by a good deal of mental depression, which is most evident on the second day. Should this occur, or be likely to occur, the patient should be told to rest as much as possible the day after an exposure.

"To avoid this, Eidenow recommends that an erythema dose should only be produced on one quarter or one sixth of the surface of the body at a time, a fresh quarter or sixth being chosen every second or third day till one arrives again at the first section exposed, when it will be again in a receptive condition. Whatever plan is adopted it is wise to underexpose till you know your patient, and to treat each patient as an individual and not according to any rigid scheme.

"There is no very sharp distinction between the local and the general bath, but a maximum local area (such as the lower part of the spine) would comprise an area of about eight inches square. In producing an erythema in a local area for special pain, such as sciatica or neuritis, the same precautions are necessary as in the general bath, but the effects remain local, and the patient is not likely to suffer from constitutional symptoms such as depression the following day.

"If you decide to give a light douche, the first exposure may be one-half to one minute back and front at one metre, and the latter figures need not go beyond two minutes back and two minutes

* Article I, *Canad. M. Ass. J.*, March, 1928, xviii, 326, Article II, *Ibid.*, April, 1928, xviii, 465, Article III, *Ibid.*, July, 1928, xix, 99.

front about twice a week. In this way you get a tonic effect only, there is no negative phase and no depression, but, of course, if special disease, such as some form of surgical tuberculosis, be present, the dose is not sufficient to produce any marked effect, beyond some improvement in the general health.

"The last point now to be considered is, in what diseases are we likely to produce cure or improvement? The answer to this is very difficult, since much of the work at present is of an experimental and empirical nature. There are, however, a few diseases which can be definitely cured or improved by light treatment, and a great many more in which a certain percentage will show cures.

"The two groups most amenable to treatment by light are undoubtedly (1) diseases associated with defective ossification of the bones, and (2) various forms of surgical tuberculosis. Under (1) we may include rickets, osteomalacia, and fractures which show little tendency to unite, and under (2) diseases of the bones of the spine, joints, skin, in fact most forms of tuberculosis

except pulmonary. In this latter complaint, it is best not to attempt using the mercury vapour lamp until some suitable and safe technique has been worked out by the experts.

"There are many other diseases improved or cured, and one may state generally that, as the light treatment enables the skin to produce immune bodies, most diseases in which there is some form of sub-acute or chronic bacterial infection will be benefited by its judicious use. As a general rule fever caused by these infections should be allowed to subside before attempting to give ultra-violet irradiation.

"The contra-indications that we have here are, therefore, pulmonary tuberculosis and fever. To these may be added kidney disease, certain forms of heart trouble, and advanced arteriosclerosis. It may lastly be stated generally, that, if reasonable precautions are taken in giving ultra-violet irradiation it will be found of great benefit to general health, will cure many complaints, and will not injure those it fails to clear up"—(*Brit J Actinotherapy*, 1928, iii, 108)

Topics of Current Interest

LORD BALFOUR ON SCIENCE AND PHILOSOPHY*

"Lord Balfour, as President of the British Institute of Philosophical Studies, delivered an address at their third Annual Meeting, on July 16th, dealing mainly with the philosophic problems arising from the advance of physical science. His words deserve consideration from all who, like members of the medical profession, are daily involved in the difficult task of reconciling the apparent, as suggested by perception, with the real, as partially disclosed by an incomplete science. It is perhaps appropriate at this juncture to remark on the peculiar fitness of Lord Balfour, who has recently attained his eightieth birthday, for the part of mediator between the point of view of the world at large and that of the laboratory and the study. His first philosophic work was written some fifty years ago, and his experience as a Minister of the Crown goes back almost forty years. In view of these circumstances, and of the known clarity of his mind, his address is of unusual interest, he took as his text some words of Professor L. T. Hobhouse: 'Philosophy does not consist in pieces of knowledge, but primarily in an attitude, a desire to understand and appreciate.' Lord Balfour agreed with this statement, and proceeded to discuss two of the problems which one should understand and appreciate—the problems of perception and induction. The plain man would ask what there was specially requiring to be understood in such simple matters. Perception

and induction were fine names for the simple operations of observing the world in which we lived and drawing conclusions from our observations. Mankind was always doing it, mankind had always done it, and with the progress of natural science they would do it more successfully every year. So, said Lord Balfour, thought the plain man. But it was just science that was the cause of their troubles. In pre-scientific days formal logic, morals, metaphysics, and metaphysical theology chiefly occupied the thoughts of philosophers, to these had now been added problems raised by physics, and these all involved perception and induction. Taking, as the most important and most obvious kind of perception, perception by seeing, the speaker described the complex train of causes and effects underlying this process—the emission of energy by electrical charges from matter, the propagation of ethereal waves, followed or accompanied by the psychophysical process, which, in each individual case, converted the physical message into a mental perception. There was a monotonous simplicity, continued Lord Balfour, about the world he had attempted to describe, and it could not be pictured as possessing either beauty or variety. But it was not merely aesthetically unattractive, it had the further defect of possessing no resemblance to the world they saw. The more they knew what reality was, the less did natural fact harmonize with perceptual experience. In these circumstances, he asked, what became of experience, and by what process of logical legerdemain was science extracted from observation? They lived in a world of illusions, how, by observing such a world, did they succeed in reaching

* *Brit M J*, 1928, ii, 163

realities? This was one form of the second question—namely, What is induction? The inductive logic which should justify the inference of general laws wholly from particular observation, even when the observations were admittedly valid, had, in his opinion, still to be discovered. What were they to think of such a task when the observations were admittedly invalid? What were they to say of the self-satisfied theorizing of the eighteenth and nineteenth centuries now that seeing had not only ceased to be believing, but was in open revolt against it? He would make no attempt to solve these difficulties, it sufficed if he had succeeded in giving some support to Professor Hobhouse's statement. Lord Balfour concluded 'I do not suggest that it is every man's duty to be a philosopher, or to spend his time speculating about the universe. I do suggest that those who make no effort to get beyond the teaching of common sense should do so in no boastful or self-confident spirit. Whenever they find common sense opposed to science, let them throw in their lot every time with science. To the man of science, on the other hand, I would say that science, though on the way to truth, is always incomplete and not always true, and that in the present state of our intellectual development its ultimate basis, deeper even than experiment and observation, is faith.' Could there be, he asked, a better justification for the existence of such a society as theirs?"

MEDICINE IN ART

The popular lecture at the last meeting of the British Medical Association, was delivered by Sir Berkeley Moynihan, on the subject of "Medicine in Art," before a large and appreciative audience. We extract the following report of this lecture from the *British Medical Journal* (August 4, 1928).

"Sir Berkeley Moynihan began by remarking on the heavy load of responsibility which the medical man had to carry. The doctor held in his hands the health and lives of his fellow creatures. When he ended his arduous day's work—a work which had made huge demands upon his nervous as well as upon his physical energies—he realized often that virtue had gone out of him. Even if he failed to realize it, it was none the less true. That store of virtue could be replenished in no other way so well as by the contemplation of things of beauty. It was of little use to play the indifferent round of golf or indulge in some other form of physical exercise, he had better devote himself to some quiet contemplation of art—beautiful furniture, china, pictures, books. Here was indeed rest for the weary mind. The lecturer then went on to speak of how the alliance between art and medicine was foreshadowed by the Greeks, how in the Greek mythology Apollo, the god of light and giver of life, was also the god of medicine, and bestowed on his favourite son, Æsculapius, the divine gift of healing. The association

between art and medicine, thus begun, had been carried on in some of the works of the greatest artists, of which he proceeded to give examples. He began by showing some representations of deformities in sculpture—in the gargoyles of cathedrals, for example—and then passed to the innumerable examples in mediæval painting of devil-possession and exorcism. People in the throes of such possession had been depicted by Raphael and many another, with more or less truth to the recognized picture of hystero-epilepsy. He commented upon the extraordinarily widespread and long-standing prevalence of the idea of an interior 'not ourselves.' Indeed, one found the same thing in Socrates, with his 'divine sign,' and Joan of Arc, with her 'voices,' not to speak of Sir James Barrie's 'M'Conachie' or the Irishman's 'Flanagan.' The idea of 'somebody else inside us' went right through the art of the Middle Ages. No testimony in a law court to-day was more confidently advanced and more unquestioningly accepted than the testimony in old time as to spirit-possession. It was vouched for by troops of witnesses. People said on oath and under torture that they had actually seen the evil spirits which Reubens and other artists grotesquely represented as being exorcised from the head or out of the mouth or fleeing the church. Even from far-away Peru he was able to show the representation of a female skull which had evidently been subjected to primitive trepanning for no other purpose than to allow of the escape of the evil spirit.

"Next came a series of studies of emotional expressions, including some by Sir Charles Bell, one of the greatest artists that the profession of medicine had produced. This series naturally included Reynolds's famous picture of John Hunter in reverie. Another example was 'The ecstasy of St Jerome,' in the Louvre which the lecturer declared to be the picture that, of all others, had the greatest effect upon himself. Nothing in the world spiritually did him so much good as to spend a few moments on every visit to Paris in contemplation of that work. He concluded with a few pictures showing how artists depicted diseases, among them achondroplasia. Curiously enough, the achondroplasia was invariably represented as being in charge of animals. Then there were such deformities as club-foot, a drawing of which was found at Luxor dating from 2500 B.C. Chronic rheumatoid arthritis existed in Egypt very badly, said the lecturer, in the period of the dynasties. Hydrocephalus and acromegaly were other abnormalities represented in art. Rodent ulcer was depicted in one of Albert Dürer's engravings, dated 1502. A delightful picture was one by Franz Hals, showing the operation for removal of sebaceous cyst from the scalp. The expressions of both patient and surgeon were eloquent, the patient in extreme apprehension, while the surgeon took the proceedings with quite phenomenal calm—very unlike Astley Cooper, who removed a sebaceous cyst from the King's scalp, and spent the ensuing

days in a dreadful state of anxiety lest anything should befall the royal patient. In the Franz Hals picture, by the way, the doctor's diploma is shown hanging on the wall, and, to make matters doubly sure, the surgeon was wearing a replica of it in his hat! Sir Berkeley Moynihan concluded by saying that the medical man, visiting galleries abroad or at home, could, from his professional knowledge, find much to interest him in the details of many pictures which were not apparent to the ordinary public. Moreover, as he had said at the beginning, the contemplation of beautiful things did help him in his daily work, and it was well for every devotee of Æsculapius to turn aside now and then and worship at the shrine of his father, Apollo.

"Sir Ewen Maclean, who presided at the lecture, and Dr C O Hawthorne both expressed the thanks of the gathering to the lecturer, the latter remarking that what Sir Berkeley Moynihan had said about the use of leisure for the study of art filled him with a certain sadness at his own wasted opportunities. In responding to a vote of thanks, Sir Berkeley Moynihan said that it had been a privilege to give the address to an audience so attentive. It seemed to him that the big and important concerns in one's life, which might be likened to the bricks in a wall, needed to be held together by something scarcely visible, the mortar filling the interstices. These things, these interests, of which he had been speaking that evening, were the mortar between the bricks. Surgery was not merely a craft or a science, it was something bigger and better than either or both. It was a spiritual devotion, and in order to set it forth as an example recourse must be made constantly to some spring or well of refreshment. That was why he had rejoiced in the opportunity that evening, not so much to show pictures or to talk more or less trivial tittle-tattle, but to put into the minds of his colleagues in the profession that this way of refreshment was open to them."

MEDICAL EDUCATION IN THE UNITED STATES

MEDICAL STUDENTS

The number of medical students, this year, was 20,545, an increase over the previous year—an increase which has persisted since 1919, when the enrolments of students reached the lowest ebb (12,930) as a result of the reorganization of medical schools. Mergers of medical schools were urged whereby an oversupply in numbers might give place to a smaller number of better equipped institutions. The entrance requirements also were increased to include two years of college work in order that medical education in this country might be on a par with that of the leading nations abroad. The reduction in the numbers of students resulting from these changes was not as great as was expected. The subsequent increase in the enrolments is of students who have

not only met the higher entrance qualifications but also, for the most part, voluntarily obtained baccalaureate degrees prior to or during their medical course.

STUDENTS FAILING TO GRADUATE

Statistics published this week show that, of the students enrolled during the nineteen year from 1907 to 1926, inclusive, 83 per cent obtained their medical degrees and only 17 per cent failed to graduate. It is interesting also to know that 90 per cent of those who did not graduate dropped out, voluntarily or otherwise, during the first two years of the medical course.

MEDICAL GRADUATES

The number of students who graduated in 1928 was 4,262, as compared with 2,529, (the lowest number in the decline), who graduated in 1922. In six years, therefore, a rapid increase in the numbers of graduates has fully offset the decrease of the eleven years prior to 1922 and, at the same time, 96 per cent are from class A medical schools, as compared with less than 60 per cent in 1911. With the closer relations with hospitals and outpatient departments, the use in clinical instruction of section clinics and clinical clerkships, and the use of autopsies and clinico-pathological conferences, these graduates have obtained a clinical training far surpassing that of twenty years ago. More than 90 per cent of all graduates now obtain internships in approved hospitals. Before beginning practice, therefore, a graduate in medicine has spent three years in the examination and care of patients and has seen more patients than many see in ten years of private practice. Twenty-five years ago in their undergraduate instruction students obtained little experience in examining patients, and most of them did not receive hospital interne training.

MEDICAL SCHOOLS

Since 1922 the number of medical schools in the United States has fluctuated between seventy-eight and eighty. The two Missouri institutions whose charters were revoked are still issuing degrees under new charters and names. With the gradual strengthening of the methods of licensure however it is believed that the end of low grade medical schools is not very far away. There are now seventy-two medical schools in class A, with the admission of Temple University School of Medicine to that class. Two medical schools remain in class B and six in class C. The University of Southern California has declared its intention of reopening the medical school this fall, and next year the new medical school of Duke University will be opened. Some of the state university medical schools now offering two years of the medical course are also planning to teach the clinical years. During recent years the tendency in medical schools has been to concentrate teaching in new and enlarged plants whereby the laboratories will be in closer contact with clinical teaching. Through these larger

plants, coupled with more teachers, more laboratory equipment and more abundant clinical material, the eighty medical schools have been enabled, during the last six years, to increase their total enrolment from 14,000 to more than 20,000 students. It is believed that they will maintain an ample capacity to care for all properly qualified students who apply for admission — (*J Am M Ass*, 1928, *xc*, 500)

MEDICO-LEGAL INSTITUTES

"In the *Lancet*, July 28, an editorial (A Medico-Legal Institute for London, *Lancet*, 1928, *ii*, 173) deals with the need for a medico-legal institute in London. It is stated that London is one of the few of the considerable towns in the world without a medico-legal institute. Apparently it was not known to the writer that in the United States there is not yet a single establishment that corresponds to a fully equipped and organized medico-legal institute like those discussed in the ninth series of *Methods and Problems of Medical Education*, issued lately by the Rockefeller Foundation, which contains descriptions and accounts of the work of twenty-four medico-legal institutes, mostly European. These institutes for the most part are departments of universities and are housed and organized much in the same way as departments of anatomy or physiology. Naturally the functions of medico-legal institutes will vary somewhat in different places, but their main business is to study medicolegal problems by scientific methods and in all cases the problems will relate in greater or less degree to deaths from unknown or violent means and to diverse aspects of crime against the person. This kind of work, the social value of which does not need particular emphasis, demands special study and training if it is to be done properly. It concerns a special field of medical science and, like all other special fields, requires steady devotion if society is to reap the full benefit of accumulated knowledge and experience and new progress is to be made. As pointed out in the *Lancet*, to call in the nearest physician or pathologist, even if trained well in an ordinary way, may not be, and usually is not, enough to elucidate properly delicate medico-legal problems. For this important purpose there plainly are needed permanent institutions, manned by trained specialists, in which routine medico-legal examination can be made in the proper way at the same time as investigative and experimental work is carried on to meet unsolved problems and new situations. Crime is progressive, it provides itself with new weapons and means, and hence those who are charged with protecting the community must see to it that their knowledge and skill expand accordingly. This requires the scientific point of view and laboratory facilities. In our country altogether too many medico-legal necropsies are entrusted to physicians who are not competent for that kind of work. Practical politics, as shown by the condition in many of our large cities, is not providing the

proper facilities for progressive modern medico-legal service. Just as in London, there are needed in our larger cities suitable establishments in which medico-legal work can be carried on properly at all times. In addition to post-mortem examinations this work includes toxicological, serological and other forms of investigation requiring expert knowledge. In several places the conditions for making such an establishment at the same time a part of a university would seem to be favourable. This is particularly true of cities in which are located state universities that maintain medical schools. And in New York and Boston, where the system of medical examiner has replaced the coroner and where fairly satisfactory standards of official medico-legal work obtain, the conditions demand increased municipal support in the form of proper housing and equipment. In speaking of medico-legal institutes, it should be noted that there is nothing magical or mystical about the word "institute" which simply means a suitable place for the work in question manned by competent persons who are left in peace to carry on their appointed tasks. As physicians, we have been slow to interest ourselves actively in improving our medico-legal service. Probably the most significant advance in this field so far in the United States is the change from the cumbersome and archaic system of coroner to the much more effective system of medical examiner, which has been made in Massachusetts, New York and New Jersey and which should be introduced as rapidly as possible in other states" (*J Am M Ass*, 1928 *xc*, 570)

THE CARBON MONOXIDE HAZARD OF THE AUTOMOBILE

"Formerly the dangers of carbon monoxide poisoning were confined to occasional exposure to the gas in mines or about blast furnaces or to asphyxiation with illuminating gas. With the increased use of "water gas," which contains about 40 per cent of carbon monoxide in contrast to the concentration of from 4 to 8 per cent in the old fashioned coal gas, the fatalities have increased. The danger of leaks from the use of inferior rubber hose for gas supply connections has become so serious that the employment of such material is wisely prohibited in some places. However, the principal danger must now be assigned to the exhaust gas from the modern internal combustion engine, of which the automobile is the omnipresent example. The mounting records of deaths in closed places, notably garages, in which the atmosphere is vitiated with exhaust gases have aroused nation-wide concern.

It is generally stated that an admixture of more than 1 part of carbon monoxide in 10,000 parts of air (or 0.01 per cent) constitutes a health hazard. Five years ago Henderson and Haggard¹ of Yale University made physicians aware of the possibility of the existence of chronic or repeated carbon monoxide poisoning, to be looked for not

only in the usual places, such as dwellings with leaky gas pipes, but also in streets where motor traffic was very dense. Subsequent reports by Wilson, Gates, Owen and Dawson² seemed to establish further the evidence of a definite street risk of repeated or chronic slight carbon monoxide anoxæmia.

The most recent survey was undertaken by experts of the United States Public Health Service³. Fourteen of the largest cities in the country, having a combined population of more than 19,000,000, were visited and studied at places presumably indicating the maximum hazard from automobile exhaust gas that may exist to-day in metropolitan thoroughfares. The average of 141 tests made in city streets at peak hours of traffic showed a contamination of 0.8 part of carbon monoxide in 10,000 parts of air. Only 24 per cent of all the street samples had more than 1 part of carbon monoxide in 10,000 of air, and in only one location, a covered passageway, was there as much as 2 parts in 10,000. Samples taken inside of autobusses yielded even lower concentrations of carbon monoxide gas. According to these investigators, the figures for street air, when viewed in the light of present-day standards of exposure to carbon monoxide, do not reveal the existence of a health hazard from this source in our city streets. The only person who may possibly be exposed to a health hazard from inhaling street air containing automobile exhaust gas is the traffic officer. This potential hazard may be minimized by diminishing the duration of exposure at the most congested traffic stations. The tests of Bloomfield and Isbell³ indicate, further, that the great danger to life is unquestionably in the small private garage containing one or two cars. Under any circumstances the discharge of an automobile exhaust into a roofed enclosure should be regarded as a hazardous act" (*Jour Am M Ass*, Sept 1, 1928, vol 1).

1 HENDERSON, YANDELL, AND HAGGARD, H. W., Health Hazard from Automobile Exhaust Gas in City Streets, Garages and Repair Shops, *J Am M Ass*, 1923, lxxvi, 385.

2 WILSON, ELIZABETH D., GATES, IRENE, OWEN, H. R., AND DAWSON, W. T., Street Risk of Carbon Monoxide Poisoning, *J Am M Ass*, 1926, lxxvii, 319.

3 BLOOMFIELD, J. J., AND ISBELL, H. S., The Problem of Automobile Exhaust Gas in Streets and Repair Shops of Large Cities, *Pub Health Rep*, 1928, xliii, 750.

EMISSION OF RAYS BY PLANT CELLS

"The latest sensation in scientific circles in Berlin is the discovery that the apex of certain rapidly growing vegetable and animal tissues emit some sort of invisible radiation which has the power to stimulate the growth of living matter with which it is not in contact. When this was first announced, in 1924, by Professor Alexander Gurwitsch, of Moscow, it was received with considerable skepticism here, but now it has been confirmed by German investigators who are

eagerly prospecting the new field of research in various directions.

"Gurwitsch found that if the tip of one of the rootlets of an onion or turnip was fixed so as to point at right angles to the side of another root, though as much as a quarter of an inch away, the cells in the side nearest the tip would multiply more rapidly than elsewhere and so bend the root away. This influence was not due to the emission of some gaseous emanation from the root tip was proved by the interposition of a thin sheet between the two roots. Glass and gelatin sheets stopped the transmission of the growth stimulation power but quartz did not. This is characteristic of ultra-violet rays and Gurwitsch concludes that the radiation from the root tips has a wave-length of 180-200 millimicrons, which would place it among the ultra-violet rays of high frequency.

"The German botanist, N. Wagner, has repeated these experiments with bean and onion roots and measured the effect by counting under a microscope the number of new cells produced in the roots acted upon. The increase is as high as 70 per cent in some cases. Old cells that have ceased growing show the greatest relative increase.

"The German bacteriologist, M. A. Baron, has found that the radiation from onion roots will likewise accelerate the growth of anthrax bacillus and other bacteria. The growing tip of toadstools gives off these same growth-generating (mitogenetic) rays.

"The Siemens Electrical Company has taken up the question and Doctors Hauser and Vahle working in these laboratories report that certain growing animal tissue, such as cancer, emit such rays.

"These results, if confirmed, will radically revolutionize present theories of life and growth. It has hitherto been assumed that the impulse to cell subdivision was somehow due to the direct contact of certain chemical substances transmitted through the tissues, but it now seems that an energy agency is active in vital processes, an immaterial radiation of the nature of light but of too high a frequency to be detected by our eyes" (*Science*, June 15, 1928).

CHEMICAL TESTS ON BLOOD

"The question often arises as to just how active a part the general practitioner should take in the application of the results of our knowledge of the chemical reactions of the blood to his patients. Reed Rockwood (*J Am M Ass*, July 21, 1928), feels that he should be thoroughly conversant with the indications for ordering the tests in various diseases and with the interpretation of the results which are reported from the laboratory as applied to his particular patient but should not take any part whatever in the actual carrying out of the procedures. The indications for chemical tests of the blood and their interpretation are as follows: 1. Never ask

for both nonprotein nitrogen and urea tests in the same patient 2 Except in emergency, never ask for a nonprotein nitrogen determination when the excretion of phenolsulphonphthalein is normal Determine the output of phenolsulphonphthalein first 3 Never ask for the creatinine value of the blood unless the nonprotein nitrogen content is above 60 mg per hundred cubic centimeters Then determine the concentration of creatinine as a matter of routine 4 Order determinations of the uric acid content in cases only of gout or suspected gout 5 Order blood sugar determinations in cases only of diabetes or suspected diabetes or hypoglycæmia 6 Ask for a test of the carbon dioxide combining power of plasma in (a) Diabetic patients with diacetic acid in the urine (b) Uræmic patients

with nitrogen retention and dyspnoea (c) Patients showing toxic symptoms who are receiving large doses of alkali (d) Conditions associated with disturbed motility of the gastro-intestinal tract with marked toxæmia (e) Tetany of all types 7 Order chloride, nonprotein nitrogen and carbon dioxide combining power determinations in all cases of disturbance of gastro-intestinal motility with marked toxæmia 8 Ask for serum bilirubin or icterus index tests in cases of jaundice, but do not pay too much attention to borderland values 9 Ask for blood calcium determinations in cases only of tetany of unknown origin 10 Order inorganic phosphorus tests, if practicable, in cases only of rickets and infantile tetany" (*J Am M Ass*, 1928, xci, 157)

Abstracts from Current Literature

MEDICINE

Über Veränderungen in der Adventitia der Aorta und Ihrer Hauptäste in Gefolge von Rheumatismus (On Changes in the Adventitia of the Aorta and Its Main Branches Following Rheumatism) Chiari, H., *Beitr z path Anat u z allg Path*, 1928, lxxx, 336

The author refers to the well-known "Aschoff bodies" which are found in the myocardium in cases of rheumatic myocarditis Later researches have shown that such bodies, which present many of the features of granulomata, are not confined to the myocardium in acute rheumatism, but may be found in organizing and organized exudates in the pericardial sac Similar nodules, differing only in small details, have also been found in the peripheral portions of the body, in the fatty and connective tissues, and in the neighbourhood of joints Some observations have been made by Fahr and others on rheumatic changes in the smaller blood-vessels, but there have been very few investigations on the condition of the larger vessels

Chiari gives details of seven rheumatic persons dying of various manifestations of rheumatism in whom he examined the aorta and great vessels after death He found in one of his cases a remarkable thickening of the adventitia of the whole of the thoracic aorta in the form of firm, bluish and white plaques, resembling cartilage, running transversely, so that a general resemblance to the trachea was produced In his other cases less marked lesions were noted in the adventitia, sometimes only of microscopical size, but in all changes of the nature of granuloma formation, resembling Aschoff's bodies, were found The author thinks that the changes he describes are commonly to be found in the aorta if the microscope is used, but is not sure whether

similar appearances are to be found in other affections such as general septic infection Only further study can clear up this point

A. G. NICHOLLS

New Clinical Aspects of Alcoholism, Richardson, J. L., and Blankenhorn M. A., *Am J M Sc*, 1928, clxxvi, 168

This paper is based on 198 cases of alcoholism treated at Lakeside Hospital, Cleveland, from 1921 to 1926 inclusive The cases of acute alcoholism showed a mild fever and transient albuminuria Acute injury of the kidney was never prominent in such cases before prohibition The average age of the 51 acute cases was forty-six, of these 41 were men and 5 were women Unusual and bizarre symptoms noted were apparently due to alcohol plus other poisons

The average age of the 24 cases of chronic alcoholics was 50 years Eight chronic alcoholics entered hospital with the complaint of nervousness, they were apprehensive, shaking, and appeared on the verge of delirium tremens but none had delirium This picture is apparently common in the chronic alcoholism of to-day Only 5 cases could be definitely called delirium tremens During the five years preceding prohibition there were 20 of these The daily tippler has given way to an individual who indulges in daily sprees

The patients with neuritis complained of weakness, pain and paræsthesia The period of disability was short

There were 14 cases of cirrhosis of the liver whose ages were between 48 and 69 years All but one case had a history of taking alcohol daily The period it was used varied from 8 to 40 years Ascites was present in 50 per cent of the cases

LILLIAN A. CHASE

Drunkenness. A Quantitative Study of Acute Alcoholic Intoxication Bogen, E, *Am J Med Sc*, 1928, clxxvi, 153

Until recent times it has been the state of drunkenness, and not the act of drinking, that has been condemned as reprehensible. The higher courts of Ohio have held that a man cannot be considered intoxicated even though the odour of alcohol on the breath, a flushed face and a disposition to talk loudly and freely be shown, unless it is further shown that he has lost either the control of the faculties or of the muscles of locomotion. In this study no person has been diagnosed as suffering from acute alcoholism in the absence of convincing evidence of loss of control and co-ordination of the muscles of speech and locomotion, in addition to mental alterations and the odour and symptoms of alcoholic imbibition.

The differential diagnosis of drunkenness—The courts have repeatedly held that the recognition of drunkenness is a matter of simple observation on which anyone may testify without any claim to expert ability or special training. Not a few of the symptoms may be produced by other causes besides the drinking of alcohol. Thyrotoxicosis or hypoglycemia resulting from hyperinsulinism, with dilated pupils, tremors, flushed face and tachycardia, and other conditions affecting the eyes, mouth or limbs may produce symptoms simulating those of acute alcoholic intoxication. So also may lesions of the central nervous system.

General survey of the material—Five hundred cases of suspected acute alcoholism were studied. The beverages used varied widely. The manifestations presented by the patients after any of these liquors were so uniformly related to the ethyl alcoholic content of the urine or breath that no attempt was made to classify them on the basis of the liquor responsible. No case of especially toxic effects from the presence of impurities or denaturing substances was noted, such as blindness from methyl alcohol, albuminuria from metallic poisons or hæmatemesis from gastric irritants. Two deaths were directly due to alcohol.

The diagnosis of acute alcoholic intoxication was made in more than two-thirds of the cases on the basis of clinical findings alone. The odour of alcohol on the breath was noted in more than 75 per cent of them. More than one-third of these had flushed face and dilated pupils. Noticeably contracted pupils were found in more than 12 per cent. Unequal pupils were found in 12 patients but cleared up as they became sober. Nearly one-fifth of the patients were in actual coma on admission. Many were stuporous, but in some instances this was due to causes other than alcohol. In addition to seven patients with actual or incipient delirium tremens many were

nervous, quavering, tremulous or restless, there was one case of convulsions. Vomiting was frequent, loss of control of urinary and anal sphincters was encountered, but a number had to be catheterized. Conjunctivitis, cyanosis, hicough, and double vision were rarely noted. Albuminuria was found six times despite the statement that alcohol converts a positive to a negative reaction.

Correlation of the data—There is a relationship between the concentration of alcohol in the urine and the degree of intoxication of the subject. Not one of the 33 patients having less than 1 mgm of alcohol in 1 cc of urine was found to be intoxicated, more than one-half of those having 1 to 2 mgm, three-quarters of those having 2 to 4 mgm, and nearly all having more than 4 mgm of alcohol in 1 cc of urine were so diagnosed.

The concentration of alcohol in the urine can not be accepted as an absolutely accurate indication of the alcoholic concentration in the tissues unless we know exactly the time period during which it was secreted. This objection has been met by having the subject void on admission and again fifteen minutes later and taking the latter sample as representing the concentration of alcohol in the patient during this interval.

The concentration of alcohol in the breath offers a satisfactory substitute for alcohol in urine when a specimen is not available. The technique of estimating alcohol in the breath is described.

Relationship of urinary alcohol to the amount imbibed—Observations under controlled conditions allowed the workers to follow the changes in the alcoholic content of the urine at different intervals following the ingestion of known amounts of alcohol. The period of highest concentration came earlier in a subject who was more accustomed to such beverages, the concentration rose more rapidly following the taking of absolute alcohol than after beer.

The alcoholic content of the spinal fluid—This was determined in twenty cases. It was very close to that of the urine. Increased pressure was found in cases containing more than 3 mgm per cc. The patients were often roused considerably and sometimes completely after the puncture.

Conclusion—The examination of persons to determine the state of intoxication should in every instance include some such quantitative estimation of the amount of alcohol in the body fluids. The quantitative tests do not supersede or replace all of the other clinical evidence, but they constitute the most reliable single factor in arriving at a correct diagnosis of acute alcoholic intoxication of a patient.

Tetanus Following Smallpox and its Prevention
Armstrong, C, *U S Pub Health Rep*, 1927, xlii, 3061

For a number of years the United States Public Health Service have been interested in the subject of post-vaccination tetanus. Their investigations showed that in one instance the infection was due to the presence of *B tetani* on the bone point scarifiers used and in another the organism was found in the bunion pads used as a dressing. Apart from these two sources however, it has never yet been shown that the tetanus organism was present in any other commercial dressings, needles or capillary tubes. Particularly careful tests were carried out on commercial vaccine but it was shown to be sterile in every instance. The only possible means by which these occasional cases of tetanus can occur after vaccination therefore are the presence of the organism at the site of vaccination or its subsequent introduction. The paper under review discusses the conditions which are most likely to favour the development of tetanus, granting that the infection in some way or other gains access to the site of inoculation.

First of all, an analysis was made of the various cases of tetanus throughout a number of years, and the following facts were established: (a) a dressing or shield was used in every case, throughout all or part of the development of the vaccination, (b) in most instances the vaccination lesion was a large one, (c) in all cases the tetanus followed primary "takes", which were usually severe.

A comment is then made on the malignant influence of shields and dressings, showing how these tend to favour stasis of blood and lymph, with development of exudate, the moisture from which macerates the skin and promotes development of bacteria. The writer observes in passing that he has never seen any reference to tetanus complicating smallpox, and yet this presents multiple lesions similar to those of vaccination, but dressings of course are absent.

Experimental evidence is then brought forward to show that in monkeys and rabbits vaccinated with virus artificially contaminated with tetanus, the development of tetanus was markedly advanced by the use of shields and dressings.

As a result of these investigations the following suggestions are made as regards the best method of vaccination: (1) No local covering should be employed. If an open lesion develops a few layers of gauze may be pinned inside the sleeve, or loosely applied to the arm, with the adhesive straps as far from the vaccination site as possible.

2 The insertion of the virus should be in a small area, never more than $\frac{1}{8}$ inch in diameter. The method recommended is that of a number of pricks through the virus, not driving the

needle directly in but pressing its side against the skin, wiping off the virus immediately after. The skin should not be rubbed with antiseptics too vigorously beforehand. Acetone is recommended amongst other solutions. The site is of some importance, since in those who are up and about the leg is obviously more exposed to infection than the arm. The age is also an important consideration, since not only does the vaccination usually run a milder course in infants, but there is less danger of contamination from their confinement, with its lessened opportunity of infection. The greater activity of boys bringing them in contact with an environment more likely to contain tetanus organisms may account for the greater incidence of post-vaccinal tetanus amongst them than in girls.

H E MACDEPOT

Hypertension and Diabetes Kramer, D W
Am J M Sc, 1928, clxxvi, 23

The combination of hyperglycæmia and hypertension occurs frequently. What is the relation between them? Three theories have been given. First, increased activity of the chromaffin system, second, that the hypertension produces an arteriosclerosis which involves the pancreas, third, that the hypertension and hyperglycæmia are both results of faulty metabolism. The author takes a systolic pressure of 150 mm as a basis of hypertension. In this study of 500 consecutive cases of diabetes 195 patients (39 per cent) showed a blood pressure of 150 mm or above.

The presence of hypertension may be attributed to various factors, namely, errors of diet (metabolic disturbances), mental unrest (prolonged mental strain), wear and tear, endocrine disturbances, infections and nephritic conditions.

The causes of diabetes are neurogenic, endocrine disturbances, hereditary influences, race, infections, errors of diet, and obesity. The similarity of the causes is striking. The tendency for diabetes to occur late in life also applies to hypertension. This was evident in the series of 500 diabetics, of whom 36.2 per cent were in the sixth decade, in the non-diabetic hypertensives 40 per cent were in the sixth decade.

Individuals with persistent hypertension of the non-nephritic type may in time develop diabetes. It is unlikely that diabetes, through its hyperglycæmia, produces hypertension.

LILLIAN A CHASE

SURGERY

Causal Factors in the Surgical Mortality of Exophthalmic Goitre Pemberton, J D, *N Y State J M*, 1928, xxviii, 256

Post-operative hyperthyroid crisis was former-

ly the most baffling problem in the treatment of goitre. This hyperthyroid crisis had a symptomatology of extreme tachycardia, high fever, nausea and vomiting, restlessness, great prostration, mental stimulation, delirium and death within twenty-four hours. No anatomical cause for death could be discovered and no measure proved effectual in checking the progress of the reaction. The only hope of treatment lay in prevention and efforts were directed at means of reducing the intensity of this reaction. This attempt at prevention led to minor surgical procedures, such as ligation, and all other efforts to improve the patient's condition.

The potential factors in the surgical mortality of exophthalmic goitre can be divided into three groups: (1) accidents, often the result of technical error, (2) acute post-operative crises, (3) the debility of the patient, the result of long-continued hyperthyroidism. By improvement in operative technique, surgical accidents have been reduced to a minimum.

The administration of iodine to exophthalmic goitre patients under preparation for surgery has resulted in a tremendous step in progress and the author believes that history will record as the three greatest influences in the development of surgery of exophthalmic goitre, the discovery of aseptic surgery, the discovery of anaesthesia, and the use of iodine in the pre-operative preparation.

There can be no standardization of the pre-operative preparation and the method must be adapted to the individual patient, but the more toxic the patient the greater is the care and time needed in the pre-operative preparation. However, three measures are essential for all patients: iodine, rest, and a high-calorie diet. General debility as an additional hazard must not be overlooked and this occurs in two distinct groups of cases: first, those debilitated as a result of a recent crisis, and second, those cases of long duration resulting in visceral degenerative changes. It is important to establish the patient's confidence. The second consideration is the anaesthetic, either local or a combination of local and general. The most common technical complications in the surgical treatment of goitre are injury to the recurrent laryngeal nerve and post-operative hæmorrhage.

R V B SHIFF

The Diagnosis of New Growths of the Colon

Kahn, Maurice, *Am J Surg*, April, 1928

Thirty-five per cent of colonic cancer cases are inoperable when they reach the surgeon. Eighty-five per cent of the remaining 65 per cent reach the operating table too late for cure. Ten per cent of the total number encountered are alive 5 years later, even with the most extensive operation. The benign tumours consist of adenoma, lipoma, fibroma, myoma, papilloma,

and angioma. The malignant tumours are sarcoma and carcinoma. Sarcoma is rare, while carcinoma is the most common of all colonic tumours.

Constipation, or constipation alternating with diarrhoea, should occur only in those cases where the tumour partially obstructs the lumen of the gut. Diarrhoea alone would be more likely to occur in the irritating type of growth, not in the obstructive type. Blood-stained stools may arise from any vascular tumour, ulceration, or from marked congestion. Belching is a constant symptom of various abdominal conditions so has little differential value, but it may be an outstanding symptom of rectal disease.

Nausea and vomiting occur in 50 per cent of the cases. Cramp-like pain is due to a narrowing of the lumen and occurs in 75 per cent. It is a valuable sign of obstruction, but a milder sort of pain, more of a discomfort which comes and goes, is frequently found in the smaller tumours and should lead to thorough investigation. Meteorism, cachexia, and visible peristalsis are usually late manifestations, as is also anaemia. It is always well to think of the possibility of cancer in an otherwise unexplained secondary anaemia. Tenesmus is apt to be marked in low-lying growths.

Tuberculosis of the caecum may simulate carcinoma very closely. If it is secondary to tuberculosis of the lung, an error in diagnosis is not likely, but, if it is primary, differentiation may not be possible, though it is more apt to occur in the young, whereas cancer occurs usually after forty. Diverticulitis may occur anywhere in the alimentary canal, but it is usually in the left colon.

Intussusception occurs usually in children, but when it occurs in the adult it is frequently caused by a new growth, which may be pedicled or sessile. Therefore, in intussusception in an adult, it is always wise to make a diligent search for a tumour.

Many patients consult their physician or surgeon for the first time during the onset of obstruction, or partial obstruction, and many patients make light of pre-existing minor symptoms. When a patient of the cancer age shows unusual disturbance of bowel function lasting more than a few days it should arouse the attending physician's curiosity enough to prompt an investigation. There is no excuse for overlooking tumours of the rectum.

R V B SHIFF

An Efficient Treatment for Varicose Ulcers

Marconci, E. E., *Arch of Derm & Syph*, 1928, xviii, 2

From studies by Lowenfeld in 1924 it was found that there were no specific organisms in varicose ulcers of the leg, although staphylococci and streptococci were the forms most commonly

found. With the reduction in the number of bacteria by treatment there was progressive healing. The bacteria were always most plentiful on the surface of the tissues. Apparently, as in normal healing, the granulation tissue prevents the bacteria from penetrating deeply.

In view of the rich and varied flora of these ulcers as shown by Lowenfeld, it occurred to the writer that general sterilization of the wound would be the best method of attack. He first tried an ointment of 1 per cent neoarsphenamine, and obtained highly gratifying results. This ointment was applied overnight, once daily. This treatment is painful, so the following ointment was evolved, neoarsphenamine, 0.3 gm., ethylaminobenzoate, 2 gm., white petrolatum, 30 gm. After this had been applied once, a 10 per cent bismuth subgallate ointment was used for a few days.

The results obtained from this treatment were highly satisfactory, the ulcers becoming clean, and healing rapidly and permanently.

H. E. MACDERMOT

Expulsion of Tooth Root Through Nose via Antrum Van Coller, F. A., *J. M. Ass. S. Africa*, 1928, II, 414

The author regards this case as one rare enough to deserve record. A lad had a tooth extracted. Apparently extraction had been difficult, and it was feared that one of the roots had been snapped off and driven into the antrum. Later, the patient complained of a bad smell in the nose and a slight discharge from the root socket. A subsequent radiogram revealed a small shadow in the upper part of the antrum. He was continually using his handkerchief and blowing his nose. One day, feeling an unusual irritation in the nose he had blown it violently, and, feeling something sharp come away, he had looked in his handkerchief and found the root. It had been in the antrum sixteen months.

A. G. NICHOLLS

The Application of Pathology to Surgical Problems Codman, E. A., *New England J. Med.*, 1928, cxcviii, 332

"Although pathological opinion in individual cases is often the most important which the patient receives in the hospital, and is therefore a necessity for efficient treatment, a far more important function of the pathologist is his ability to teach. Every man who practices medicine in any of its branches needs a sound training in pathology, but none more so than the surgeon. It is therefore a surgical problem to see that the supply of pathologists is kept up. So far as our influence on medical faculties and hospital boards goes we should advocate adequate budgets for the pathological departments,

and reiterate that the supposed advances in surgery of recent years are largely due to the pathologists and that our own daily work would be less effective if we had not had training in pathology. I think we older men can also do something in advising our assistants that a year or two in a laboratory where gross pathology can be studied and correlated with the histology will surely make a better surgeon. We surgeons must also accent our demand for a clinical tissue pathologist as opposed to one from the widening subdivisions of pathology which are now engaging attention, as serology, immunology, etc. If one looks over the journals of pathology, few articles on gross or minute pathology are seen. Practically, the tissue pathologist is disappearing and it is a very important problem for surgeons to make an attractive place for him. Perhaps the answer will be to isolate the bulk of the surgery of malignant disease into a specialty and let the surgeons do their own microscopy." (Abstracted in the *Bulletin*, Association of American Medical Colleges, July, 1928)

OBSTETRICS AND GYNÆCOLOGY

The Hormone Test for Pregnancy Siddal, A. C., *J. Am. M. Ass.*, 1928, xci, 779

At the beginning of this year Dr. Siddal published a preliminary report on a suggested test for pregnancy, based upon a study of forty-five cases. The results of his investigation were epitomized in the *Canadian Medical Association Journal* (1928, xix, 373) as they seemed promising. Now, the author gives his investigations on ninety-seven additional cases, which in general confirm his previous observations.

In brief the test (improved) consists in the injection of the blood serum of pregnant women into sexually immature female mice weighing less than 18 gm. In this case enlargement of the uterus follows, or, the test can be applied to sexually mature female mice, when a striking enlargement of the ovaries results. The total mouse weight divided by the weight of the uterus plus ovaries gives a ratio that serves as an index. If the ratio is above 400 the test is considered negative for pregnancy, if below positive. Excluding three cases for technical reasons, there were only six erroneous results in his total of 142 cases. The specific agent is probably a hormone. This test is reliable early and late in pregnancy and the author thinks it is of practical value. The test can also be used for the qualitative determination of the potency of commercial liquid extracts of ovary, placenta, and probably of the anterior lobe of the pituitary body.

A. G. NICHOLLS

PÆDIATRICS

Factors in the Decay of Teeth Kappes, L O,
Am J Dis Child, 1928, xxxvi, 2

It has been observed that the incidence of dental caries in the northern States is rather high, a fact borne out by the results of inspection of the school children of Rochester, Minn. In order to determine the possible reasons for this an investigation amongst these school children was instituted. Two groups of 25 each were studied, one group possessing good teeth and the other showing marked dental caries.

The procedure was to obtain all the details possible about the children's diet from birth, the condition and care of the teeth, the time of eruption, the amount of outdoor play, general health and past illnesses. The health of the mother was also inquired into, her diet and health during pregnancy, the amount of exercise taken and exposure to sunshine, and dental trouble during the period. The condition of the teeth of both parents was obtained when possible.

Much information was collected and analyzed, but the net conclusion of the investigation was "not as striking as one would expect." The only factor that seems to be of definite etiological significance in preventing decay of teeth is a diet composed of fruit and vegetables.

H E MACDERMOT

PATHOLOGY

Syphilis et Maladie de Hodgkin (Syphilis and Hodgkin's Disease) Langeron, L, *Bull et mém Soc Med d Hôp d Paris*, Dec 15, 1927, li, 1619

Following a personal observation, the author takes up the question of a possible relationship between Hodgkin's disease and syphilis.

His patient was a man, aged forty-five years, with a maculo-papular rash and fluctuating swellings on the nose and tibia, who was cured of his affection by specific treatment. Two months afterwards he developed a generalized adenopathy with eosinophilia. Death occurred one month later. The autopsy showed multiple enlarged glands with splenomegaly. The histological and parasitological studies in the case were negative for syphilis, but characteristic for lymphogranulomatosis. Nothing in the study of the case indicated that the Hodgkin's disease present differed in any way from other cases. Anti-syphilitic treatment had been ineffective so far as the lymphogranulomatosis was concerned. He concludes that syphilis is not one of the etiological factors in the anatomico-clinical syndrome known as Hodgkin's disease.

He supports his conclusion, further, by the following considerations—

1 A history of syphilis is not found more

often in Hodgkin's cases than in those of other diseases taken at large.

2 The lesions in Hodgkin's disease bear no resemblance to those in syphilis.

3 The syphilitic adenopathy does not present the same clinical picture as that of Hodgkin's disease.

4 In only one case, that of Loewenbach, was specific treatment followed by success.

5 The Wassermann reaction only indicates the nature of the soil, and should not prejudice the occurrence of another subsequent affection.

6 The observation of Proescher and Winter, who found spirochaetes in the lesions of lymphogranulomatosis, remains isolated.

A G NICHOLLS

THERAPEUTICS

The Response of Chronic Nephrosis to Parathyroid and Thyroid Medication Lewis D S, and Service, W de M, *Ann Int Med*, 1928, ii, No 1, 66

This is a carefully written review of modern ideas concerning nephrosis. The writers conclude that lipoid or chronic nephrosis is of rare occurrence in pure form, but in coincidence with other chronic nephritides it will probably be recognized more frequently with careful study. Seven fully identified cases have been recognized at the Medical Clinic of the Royal Victoria Hospital, Montreal, within the last two years. Extended chemical studies are necessary to recognize the condition, but it should be suspected when there has been an insidious onset, a long continued œdema, copious albuminuria and marked pallor, without evidence of cardio-renal involvement. A milk plasma, noted a century ago by Bright, is an added diagnostic feature.

The authors give details of four cases of chronic nephrosis, one only being of the pure form. The first case responded strikingly to parathyroid medication, the second and third showing no response to it. The second case became œdema-free after all treatment had been stopped; in the third case the œdema subsided after massive doses of desiccated thyroid gland. In the fourth case there was a rapid advance of the disease after thyroid medication. In no instance was the albuminuria affected by the treatment.

It was only the case of pure nephrosis therefore in which there was a response to parathyroid extract. It is this pure type only in which much improvement may be looked for. In the mixed type of case there is usually a gradual progress of the associated nephritis.

H E MACDERMOT

Use of Subcutaneous Injections of Oxygen Kirk, T S, *Brit. M J*, 1928, ii, 185

Dr Kirk has collected a number of cases of

pneumonia in which subcutaneous administration of oxygen has been successfully practised. The good effects are said to be due to neutralization of the toxæmia with perhaps some action on the organisms themselves. There was a uniform hastening of the crisis following its administration.

Its value, however, is apparent in other cases in which anoxæmia is present, such as post-anæsthetic sickness, or scalds and burns. In the latter condition Dr. Kirk has had extensive experience of the valuable results from oxygen, especially if given early.

The gas is injected straight from the cylinder through rubber tubing and a fine needle. There is no need for heating or filtering the gas. A convenient place for giving it is below and outside the breast. The quantity to be given need not be measured very closely. Experience showed that if enough gas was injected to inflate the skin over an area equal to the size of the palms of two hands, the amount would be in the neighbourhood of 200 c.c., which is a safe initial dose. Much larger amounts can be safely given. In bad cases it is best to give about 400 c.c. at first and repeat in six hours if most of it has been absorbed. It can be given as easily and as quickly as serum, and is less painful. No ill effects, either locally or generally, have been encountered in an experience of about 200 cases.

H. E. MACDERMOT

Prone Pressure Method in Electric Shock Report by an Engineering Committee on Electric Shock *J Indust Hyg*, 1928, x, 117

The use of the Schafer prone method in resuscitation from electric shock and recognition of its value has only occurred within the last few years. Various public utility bodies in Canada and the United States have offered medals as rewards in instances of successful resuscitation, the Canadian Electrical Association medal being awarded also for resuscitation by means other than the Schafer method. It is of interest to know that the medal used for preparing the Canadian Association medals came from the wire forming the first high tension line in the British Empire (that of the North Shore

Power Company between St. John's and Three Rivers).

The report under review includes a total of 265 cases of electric shock. Of these, 200 (75 per cent) were resuscitated by the prone pressure method, and the remainder died in spite of attempted resuscitation. Analysis of the 200 successful cases reveals several points of interest. (1) The greater percentage of successful cases was amongst those who had received the higher voltages. (2) There was a slightly higher percentage of success amongst those who fell clear of the contact than amongst those who were removed by other means—78 per cent as against 71 per cent. (3) A considerably higher percentage of success was obtained amongst those on whom resuscitation was carried out within the first three minutes of the shock than when a longer interval had elapsed (78 per cent as against 67 per cent). (4) The average length of time necessary for resuscitation was found to be from 15 to 20 minutes, independent of the voltage. Several cases, however, required much longer periods, varying from one to two and a half hours, with one case requiring eight hours.

It is evident therefore that the duration of contact with the current is an important factor in the prognosis and that attempts at revival must be begun at the very earliest possible moment.

As a result of their wide experience the public utilities in the United States and Canada have unanimously condemned mechanical devices for respiration such as the pulmotor, lungmotor, and other similar devices. The Commission states that these devices are "paradoxically enough" only used by the companies when demanded by the attending physician.

The Schafer method is fatiguing to the operator and may be dangerous to the patient if not properly carried out. It is often necessary to change the operator from time to time. It is important to keep the patient warm and to insist on his remaining quiet for some time after revival. A brief return of natural respiration is not necessarily an indication for stopping the resuscitation. Above all it should not be stopped until it is absolutely certain that there is no hope of revival.

H. E. MACDERMOT

Life certainly is a struggle for existence all organisms are forced to protect themselves against the injurious agencies in their environment. Life is a perpetual adjustment and re-adjustment of the individual to its environment. All adjustments may not be ultimately beneficial to the species though they may confer an advantage upon the individuals of a particular generation. For example, if one method of protection

against a particular enemy is completely successful, other methods become unnecessary, and since the organism is no longer selected with reference to these, they may drop out of the equipment of the species and be seriously missed when later in the history of the species they are demanded.—F. A. E. Crew, *Edinb M J*, 1928, xxxv, 401.

Obituaries

Dr Robert Johnstone Blanchard passed away suddenly in Winnipeg on September 10th. He was born in Truro, N.S., in 1853, and was educated at the University of Edinburgh (M.B., 1877). He acquired there not only an excellent professional training but also that philosophical spirit that dominates the Scottish nation. His active life was spent in Manitoba and he attained the highest standing among his confreres, and the respect and confidence of his large clientele. He was one of the Incorporators of the Manitoba Medical College, and for many years as Professor of Surgery was a capable and inspiring teacher. Surgeon in chief for the Western Division of the Canadian Pacific Railway, he took a prominent part in the development of that system during its early years. As President of the Canadian Medical Association in 1909 he aided in the progress of our profession in its scientific, business, and social aspects. During the war he spent two years in France as Commanding Officer of No. 3 Canadian Casualty Clearing Station. In 1921 the University of Manitoba recognized his scholarship and professional attainments by conferring on him the degree of LL.D. Every one who knew him will carry in thankful recognition the image of the perfect gentleman. To have known Dr. Blanchard well was an education in honesty, simplicity and sincerity. H. H. CHOWN

AN APPRECIATION

My recollections of Dr. Blanchard go back for sixty-five years. We were boys together at school in Truro, but he was several years younger than I. He was a clever boy, but his chief distinction was his ability as a reciter. At the public examinations, or other special occasions, he was in great demand. He had the gift when declaiming a parody, or some other mirth-provoking piece of prose or verse, of preserving the most dignified gravity of face and demeanour while his audience rocked with uncontrollable laughter.

But it was eight or ten years later, when he and I were beginning our medical studies in Dalhousie University, that we became really acquainted and formed a friendship which has been one of the happiest conditions of my life. This friendship was very close and intimate when we roomed together during our years of study in Edinburgh University.

He was a keen and diligent student, distinguishing himself especially in anatomy and physiology. He never "crammed" but he was not a superficial reader, and when faced with conflicting opinions, *Nullius in verba* he strove to ascertain the fundamental facts and to theorize for himself. He gave much of his time to practical work, especially as a dresser in the surgical wards.

We graduated on the same day, August 1, 1877, and soon after he was appointed resident medical officer at the Craiglockhart Poor House Infirmary near Edinburgh. In this first appointment he showed what manner of man he was to be, for he attracted the attention of the Director by his tireless devotion to his duties and his thoughtfulness and sympathy for the tired, sad, hapless people who were his charge, particularly the old men and women and the cripples.

After some weeks he became resident surgeon in the Stirling Infirmary, one of the best of the best "provincial" hospitals in Scotland. Here he was a very great favourite, not only with the patients who were touched by his kindness and gentleness, but with the visiting staff who soon recognized his ability and trustworthiness. One of my happiest recollections is a visit of two or three days with him in this hospital. He held this position for a year and resigned when he returned

to his home in Nova Scotia. He and I came out together in December, 1878. After he had spent some weeks with his friends, he secured a position as one of the doctors in the service of the Canadian Pacific Railway, then



Dr. Robert Johnstone Blanchard

constructing the line beyond the Great Lakes, and for two years he knew the hardships and toils of practice among the woods, lakes, rocks and rivers of the famous Section B. Here again he gained a reputation, not only by his success in the surgical cases under his care, but by the energy and endurance displayed in making his way to the injured. If a "trolley" was not available he would tramp for miles through the bush, carrying his surgical outfit, or paddle a canoe, or in winter walk on snow shoes through woods or on the ice. By day or night, in rain or blizzard, he would find his way to the scene of the accident. There are old men now who love to tell of his hardiness and endurance as well as his skill. When he left this position to settle in Winnipeg the contractors and men working on Section B presented him with a fine set of surgical instruments and an engraved address testifying to their regard for him.

His connection with the Canadian Pacific Railway did not terminate when he left Section B, for he was for many years medical adviser and chief surgeon on the Western Division of the road. He became one of the best known and respected medical men of the west. He took a keen interest in medical education and was one of the founders of the Manitoba Medical College. He was President of the Canadian Medical Association in 1909. In the late war he commanded No. 3 COS,

and that unit was a model of organization and efficiency. I remember being told by the A.D.M.S. of that area that he took Colonel Blanchard up to Remy Siding and showed him a green field and said "There's your field," and that he was surprised and pleased at the rapidity with which the staff of No. 3 had set up their hospital.

A few days ago in Ottawa, I met Dr. Prowse and Dr. Thornton mutual friends of my own and Dr. Blanchard, and asked them for my old friend. I knew that some time ago he had had some disquieting symptoms but in the last letter I had from him he reported himself as much better. They both told me he was looking better. I said "All I want is that Bob and I should live to meet in Winnipeg in 1930, and hear the Third Listerian Oration." They said "Both of you look quite fit for that."

But he has gone, and a part of my life seems to have gone also.

JOHN STEWART

Dr. David James Evans. It is with much regret that we announce the sudden death on September 1st of Dr. D. J. Evans, formerly Associate Professor in Obstetrics in McGill University. Born in Montreal, May, 1868, he was the son of Mr. Edward Evans, who spent some years of his life as missionary in China. He received his early education at the Montreal High School and Lincoln College in Sorci, and after spending a year in the Faculty of Arts entered upon the study of medicine in McGill University from which he graduated in 1890. Shortly after graduating he received the appointment of resident physician in the Montreal Maternity Hospital, and at the end of this appointment he accepted the position of Superintendent of the Montreal General Hospital, made vacant by the resignation of the late Dr. R. C. Kirkpatrick. Much interested in the practice of midwifery he resigned from this position on the advice of friends, and went overseas to pursue special studies in France and Germany, and upon his return to Canada was offered the position of Demonstrator in Obstetrics in McGill University. Thus he accepted in 1895, and from this position rose to be Lecturer in Obstetrics in 1900 and Associate Professor of Obstetrics and Diseases of Children in 1912. During this period, besides numerous contributions to medical journals, he wrote for a Philadelphia firm a Student's Handbook of Obstetrics, which passed through two editions and was translated into one of the eastern languages.

For many years he was also one of the attending physicians at the Montreal Foundling and Baby Hospital, and always took a warm personal interest in both its medical and financial success. He rarely missed attendance at the monthly meetings of the Board of Governors.

Dr. Evans made many friends during his college days. He had deeply religious convictions and took an active part in the Young Men's Christian Association of this city, and for one year acted as its President. During the early part of his career he had looked forward to entering upon the foreign missionary field, but with opportunities opening in Montreal this thought was given up.

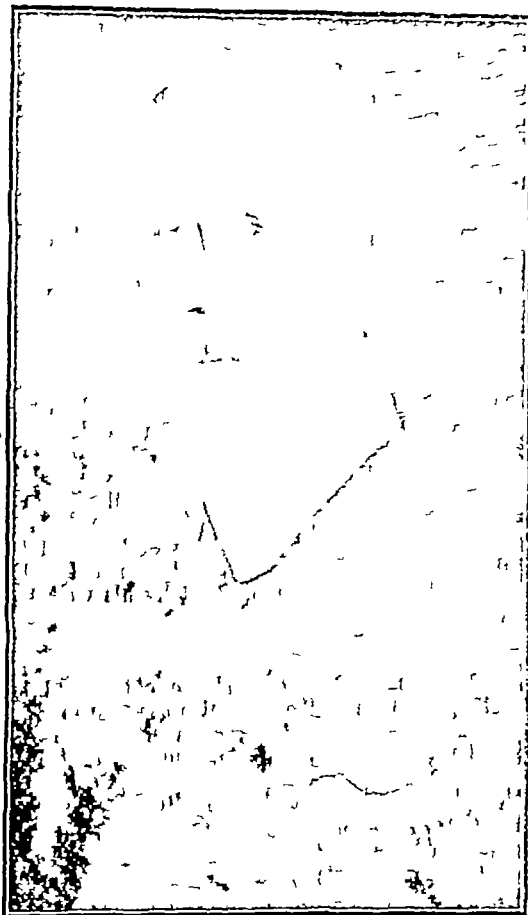
Although keenly in favour of the more robust and athletic side of student life, all through his life, yet he never took an active part in college sports. A tinge of fatalism in his mentality held him to the conviction that he would never pass his sixtieth year, and appears to have influenced his choice of recreation even in youth.

Eight years ago he retired from active practice, and after two years' residence abroad returned to America, taking up his residence in Boston and making his home in Dover, Mass., during the summer months. He was appointed by the overseers as a visitor at Harvard Medical School, and in many ways continued his active interest in medical matters. He was a trustee of the Old Ladies' Home, a member of the St. Botolph

Club, Norfolk Hunt, Dodham Country and the Polenta Club of Dover, as well as of the Mount Royal Club of Montreal.

Dr. Evans was twice married, his first wife, Miss Mary Franklin of East Orange, N.J., died with him. His second wife, Miss Rosalind Allen of Boston, preceded him with two children.

H. D. HAMMOND



Dr. David James Evans

AN APPRECIATION

I have learned with deep regret of the recent death of Dr. David J. Evans, which occurred in the United States. While residing in Montreal he was one of the most distinguished members of our medical profession.

It is several years ago that I met him for the first time, he was then on the teaching staff of McGill in connection with obstetrics and diseases of children. We sat together on the Pure Milk League Commission with Prof. A. D. Blackader, Dr. Milton Hersey, Dr. S. Boucher and the late Dr. I. Cormier, Professor of Pathology at the University of Montreal. We were all very deeply interested in the reorganization of the Montreal milk supply, and had many meetings at Dr. Evans' residence on Dorchester Street West. Our proceedings, some way or another, attracted the attention of Lord Atholstan (then Sir Hugh Graham) who subscribed all the money we needed to make a close inspection of some of the milk producing districts surrounding Montreal. We were then able to obtain the services of the late S. M. Barre, a man of experience as special inspector. Dr. Evans was the most active member of this Milk Commission and I am glad to say that his good advice, together with the educational campaign instituted by our inspector did a great deal towards the improvement of our milk supply.

Later on, during the great influenza epidemic, when a consulting hygienic committee met every day, presided

Dr Tyrrell was very active in church work, in connection with St Anne's Anglican church of which he was a member. He is survived by his widow, two sons and one daughter, and by three brothers.

Dr William Wilkinson died in Edmonton, Alberta, on August 18th. He had just received an appointment as surgeon to the Royal Canadian Mounted Police and was proceeding to Herschel Island in the Arctic when he was stricken.

Dr Wilkinson was the son of the late W. S. Wilkinson of Woodstock. He is survived by his widow and one son, and by his mother and a sister. Interment was in Avon.

Dr William John Smith, one of the most honoured citizens of Brampton, Ont., died at St. Michael's Hos-

pital there on September 17th, in the 81st year of his age. He had met with an accident on September 1st, when his automobile was struck by a truck at the corner of Nelson and Park Streets. He was eventually provided fatal.

Dr. Smith was born at Ripley, the son of Robert Smith. He graduated in medicine at the University and then took a post graduate course for two years in London, England. He first engaged in practice at the place of his birth, in partnership with Dr. I. Vanderlip but removed to Brampton about nine years ago. Ever ready to answer the call of a patient, conscientious in his work, he endeared himself to the people in his town.

Dr. Smith is survived by his wife, formerly Miss Priscilla May Rogers, and two small children, and by his aged mother at Ripley, five brothers and three sisters.

News Items

GREAT BRITAIN

The fourteenth annual conference of the National Association for the Prevention of Tuberculosis, which is to be held in the British Medical Association House, Tavistock Square, London, on October 15th and 16th will be attended by a number of Canadian medical officers who are visiting Europe to study tuberculosis work. Sir Arthur Stanley will preside, and the principal speakers in the first day's discussion, on "The occurrence of tuberculosis among primitive peoples," will include Dr. R. C. Ferguson (Saskatchewan), Dr. Vassal (Annam), and Professor S. Lyle Cummins. The subject for the second day's proceedings will be "The principles underlying a scheme of anti-tuberculosis measures in any country," and the opening speakers will be Sir Robert Philip, Dr. Howard Holbrook (Canada), and Dr. G. Lissant Cox. A dinner in honour of the Canadian visitors will be given in the Savoy Hotel on the first day of the conference. The proceedings are open to all persons interested in tuberculosis. Full information may be had from the secretary of the Association, 1, Gordon Square, London, W.C.1. Recently the association announced the publication of a new series of posters designed to assist organizations and individuals in anti-tuberculosis work. These posters are eminently suitable for display in schools, hospitals, and dispensaries, public buildings and workplaces, most are printed in colour. Each embodies either a simple, direct message of advice on preventive methods or an appeal for support in the general campaign. A number of the posters have been prepared in postcard form. Another educational activity is the creation of a caravan service with three motor vehicles, each carrying a medical practitioner as lecturer, with a cinema, supplies of films, posters, charts, photographs, and other material for a small tuberculosis exhibition. These units are placed at the services of local authorities, etc., throughout Britain, and requests for co-operation will be welcomed. A leaflet illustrating the association's posters and giving details of the caravan educational service may be had on application to the address given above.

A public health congress and exhibition organized under the auspices of the various associations representing municipal and other local authorities, will be held in the Royal Agricultural Hall, London, in the week beginning on Monday, November 19th, when the opening ceremony will be performed by Mr. Neville Chamberlain, Minister of Health, who, as president of the congress, will afterwards address the delegates. The congress is designed to bring together all public health authorities

and all interested in social welfare work and the organizing committee, under the chairmanship of Sir Frederick Willis, has secured the co-operation of many distinguished workers in the field of public health. Sir George Newman will give an address on the opening day on the purpose of the public health services. On the following day Sir Walter Fletcher will discuss research in public health, and Mr. C. Hubert Bond will deal with local organization for the prevention and treatment of mental disorders. On Friday, November 23rd Dr. W. M. Willoughby, medical officer of health for the City of London, will give an address on food protection, and on the same day Mr. R. H. P. Orde, of the British Red Cross Society, will speak on the construction and equipment of hospitals. Housing, the smoke problem, milk supply, water supply, sewage, and town cleansing will also be discussed.

The Second International Conference on Light and Heat in Medicine, Surgery and Public Health will be held at the University of London, S.W.7, on October 29th, 30th and 31st, and November 1st.

Lord Haldane

"The death of Viscount Haldane, O.M., F.R.S., will recall to some of our readers that this distinguished statesman, lawyer, and philosopher was a nephew of Sir John Burdon Sanderson, M.D., F.R.S., Regius Professor of Medicine at Oxford from 1895 to 1905, and eminent alike as experimental physiologist and pathologist, and a brother of Dr. J. S. Haldane, F.R.S., of Oxford, many of whose addresses on the physiology of respiration and other subjects have appeared in these pages. Lord Haldane's personal claim to remembrance by our profession rests on his work as Secretary of State for War between 1906 and 1912. In the words of Sir Alfred Keogh, he was one of the two statesmen in latter days (that is, since Lord Herbert of Lea left the War Office in 1860) who understood the Army Medical Department. The Territorial Service set up by Lord Haldane enabled the officers of the R.A.M.C. to come into organic union with their brethren of the civilian profession before the outbreak of war."—*Brit. M. J.*

Sir Thomas Holland, noted geologist and rector of the Imperial College of Science, London, was elected president of the British Association for the Advancement of Science on September 12th. He has been connected with the association for thirty years. He will serve as president during 1929.

Sir Thomas Henry Holland, KCSI, KCIE, FRS, President elect of the British Association, is an eminent geologist, sixty years of age, and a son of the late John Holland, of Springfield, Manitoba. He was born and educated in England, and has served as Director of the Geological Survey of India, 1903-9, Professor of Geology and Mineralogy, Manchester University, 1909-18, member of the Governor General's Council, India, 1920-21, and Rector of the Imperial College of Science and Technology since 1922.

Radcliffe Infirmary, Oxford

MR MORRIS'S GIFT OF £38,000 FOR EXTENSION

Mr W R Morris, the head of the firm of motor car manufacturers, has promised a gift of £38,000 for the extension of the Radcliffe Infirmary, Oxford. This was announced at the quarterly meeting of the Court of Governors. The gift will be used for the building of a new maternity home.

NOVA SCOTIA

Canadian physicians who served overseas during the war will be interested to learn of the marriage of Major General Cailleton Jones. The ceremony took place at Alassio on the twenty-eighth of July, the bride being Countess Mammì, of Italy. General Jones is a son of the late Honourable A G Jones, at one time Lieutenant Governor of Nova Scotia. After his graduation, General Jones practised medicine in Halifax until he became a member of the Permanent Army Medical Corps. He was very active in connection with all medical affairs and for several years was secretary of both the old Halifax Medical College, and of the local branch of the British Medical Association. He was always interested in military medicine, and gained distinction in the South African war. It will be remembered that during the late war he was not in favour with the then Minister of Militia, and despite the fact which is very generally acknowledged that he rendered excellent service under very difficult conditions, he was retired from office, but retained the confidence and esteem of a large percentage of medical officers who felt that he had not been justly treated.

The Honourable Dr W N Rehfuess, who was appointed to the Provincial Medical Board by the Nova Scotia Government, has resigned this appointment.

In a recent issue, reference was made to a dispute between the City Council of Sydney, and the Medical Board of the Sydney City Hospital, relative to the purchase of a new x-ray plant. The matter has since been amicably adjusted, and an order has been placed for a thoroughly modern and complete equipment.

Miss Boa, who has been superintendent of the Pictou Memorial Hospital for some years, and who took an active part in the campaign which resulted in the replacement of the old hospital by the fine new building known as the Sutherland Memorial Hospital, has, to the great regret of all interested in the institution, resigned the superintendency of the new hospital to accept a very responsible position in a hospital in the United States.

A legal case which was very interesting to members of the medical profession, was recently before the Court at Truro. Action was brought to appoint a guardian to a man who suffers from Huntington's chorea. Medical evidence was brought in by both sides, and it is pleasing to note that all the doctors agreed that the patient was competent to conduct his own affairs. There have been quite a number of cases of Huntington's chorea in Nova Scotia, more especially in Colchester County. All the patients have been descendants of a brother and sister who came to Nova Scotia from the border of France and Switzerland to escape the persecutions which followed the revocation of the Edict of Nantes. In each of six generations of descendants of this brother and sister there have been several cases of the disease. The disease has been transmitted only by

those who actually suffered from it, and those in each generation who escaped the malady have not passed the disease to any of their progeny.

The members of the Pictou County Branch of the Medical Society of Nova Scotia paid a notable tribute to two senior colleagues on August 15th, when they tendered a complimentary dinner to Drs Evan Kennedy and John W MacKay, of New Glasgow. Both of these gentlemen have served long and worthily in the ranks of the profession, and have enjoyed well merited esteem and confidence amongst all classes of the community. It is pleasant that their excellent qualities of head and heart and hand should have been recognized while they are still active in the practice of medicine. A number of prominent men were present at the dinner and spoke of Drs Kennedy and MacKay in quite as generous terms as the medical man who recounted their virtues.

Dr A F Miller, Superintendent of the Nova Scotia Sanatorium at Kentville, was married to Miss Lily Proctor, of Halifax, on August 18th. Dr Miller is well known to tuberculosis workers throughout the continent who will feel a special interest in his matrimonial venture. The wedding ceremony took place in St Andrew's Church, Halifax.

Drs A F Miller, Superintendent of the Nova Scotia Sanatorium, P S Campbell, of the Provincial Department of Health, and T M Siemewicz, of the Massachusetts Halifax Health Commission, have been chosen to represent Nova Scotia on the educational tour of the British Isles and Continent, arranged by the Canadian Tuberculosis Association.

Plans have been prepared for a nurses' residence in connection with the Children's Hospital, Halifax, and it is expected that work on the new building will be commenced shortly.

W H HATTIE

The members of the profession will extend congratulations to Miss Margaret MacKay, daughter of our good confrere Dr H H MacKay of New Glasgow, upon obtaining a further scholarship which will entitle her to do postgraduate work in physiology at Toronto and McGill Universities.

Dr Charles Spiro of New Glasgow, while motoring to Sydney on August 3rd, struck a horse with his car. The force of the impact was such as to throw his travelling companion, Mr James M Milne, so violently against the side of the car that he was unconscious for some twelve hours from concussion.

Here is our present list of registered practitioners who graduated fifty years or more ago—

Dr A J Cowie, Halifax, graduated in 1860, 68 years ago, Dr Geo E Buckley, Guysboro, graduated in 1867, 61 years ago, Dr D O Saunders, Bridgetown, graduated in 1869, 59 years ago, Dr H B Webster,

Kentville, graduated in 1870, 58 years ago, Dr Daniel McIntosh, Pugwash graduated in 1871, 57 years ago, Dr Finlay MacMillan, Sheet Harbor, graduated in 1872, 56 years ago, Dr A M Perrin, Yarmouth, graduated in 1873, 55 years ago, Dr Robinson Cox, Upper Stewiacke, graduated in 1875, 53 years ago, Dr J N Mack, Halifax graduated in 1875, 53 years ago, Dr S N Miller Middleton, graduated in 1875, 53 years ago, Dr Chas I Fox, Pubnico, graduated in 1876, 52 years ago, Dr Evan Kennedy, New Glasgow, graduated in 1876, 52 years ago, Dr J R Chute, Elderbank, graduated in 1877, 51 years ago, Dr J D Denmore, Port Clyde, graduated in 1877, 51 years ago, Dr John Stewart, Halifax, graduated in 1877, 51 years ago

The new Lord Nelson Hotel in Halifax will entertain as its first guests the members of the Medical Society of Nova Scotia and their friends from October 15th to 20th, inclusive. The entire hotel will be reserved for this purpose, for the first guests and the first convention. This is really a notable event for Halifax and Nova Scotia and the Medical Society may well be congratulated upon this honour. When conventions with headquarters at this hotel become matters of weekly or monthly occurrence we shall stand as pioneers. The hotel for that week belongs to the Medical Society of Nova Scotia and only their friends will be entertained there for that time. The entire registration including Halifax guests for luncheons and dinners should reach the three hundred mark. S. L. WALKER.

PRINCE EDWARD ISLAND

The Prince Edward Island extra mural course for August was held at the Prince Edward Island Hospital, Charlottetown, on the 15th ult. The speakers were Drs. F. H. MacKay, Ray Brow and Geo. Little, all of Montreal.

Dr MacKay's talk on anterior poliomyelitis was not only instructive but also very timely in view of the opinion he himself gave, namely, that there is some likelihood of another epidemic throughout America in the near future. He stressed the importance of early diagnosis, the use of convalescent serum in cases seen early, with galvanism and massage for the late stages. He urged upon practitioners the necessity of considering the disease as an acute infectious one, rather than relegating it to the awe inspiring realm of neurology.

Dr Little in his discussion of fractures about the ankle joint, and Dr Brow on cardiac arrhythmias, gave us much valuable information in a clear concise way.

The extra mural courses continue to be very much appreciated by the Prince Edward Island men. Physicians, particularly those isolated as we are from the medical centres, owe a debt of gratitude to the Canadian Medical Association for originating this enlightened policy, and also to the busy men who come to us at considerable personal sacrifice. We assure them that these lectures are enabling us to do much better work and from our point of view at least are very much worthwhile. J. W. McKEE, M.D.

NEW BRUNSWICK

Dr R. J. Collins and Mrs. Collins, Dr W. Wherrett and Mrs. Wherrett, and Dr H. A. Farris, of New Brunswick, are in Europe on the Sun Life Tour for Executives of Tuberculosis Institutions. Dr Farris reports a very excellent reception in England and in a recent letter especially mentioned the hospitality provided for the party by Sir Henry Gauvain.

The annual meeting of the New Brunswick Medical Society was held this year on September 19th at Fredericton. The late date was necessary to avoid confusion with the Canadian Medical Meeting at Charlottetown.

The Council of the New Brunswick College of Physicians and Surgeons met in Fredericton on the evening of September 18th. Present at the annual meeting were Dr Price, Moncton, Dr Barr, Dr Addy, and Dr S. H. McDonald, St. John, Dr G. Clowes Vanwart of Fredericton, and Dr Laporte of Edmundston. Their reports with those of the Registrar and Treasurer were presented at the general meeting the following morning.

Discussion arose concerning Workmen's Compensation affairs. The following committee was appointed to meet the Compensation Board: Dr J. M. Barry, chairman, Dr V. D. Davidson, Dr A. S. Kirkland, all of St. John. Communications were presented from the Medical Protective Association, and from the committee dealing with the formation of the Canadian College of Physicians and Surgeons. The latter scheme was endorsed with the provision that New Brunswick men be included in the nucleus of charter members.

The election of officers resulted as follows: President, Dr C. J. Veniot, Bathurst, First Vice-President, Dr D. W. Ross, Fredericton, Second Vice-President, Dr A. S. Kirkland, St. John, Treasurer, Dr V. D. Davidson, St. John, Secretary, Dr J. R. Nugent, St. John.

Dr B. W. L. Earle of Perth was elected to fill the vacancy on the Council caused by the death of Dr Rankine of Woodstock.

Dr E. T. Ryan of Saint John left last month to spend a year in London and Paris doing advanced work in urology. A. STANLEY KIRKLAND.

QUEBEC

The Director General of Studies at the University of Montreal, Dr Telesphore Parizeau, reports that a very heavy number of foreign born students have registered at the faculty of medicine for the coming scholastic year

Miss Adrienne Boulé, of Quebec City, a graduate of Laval University, is leaving for Natashquan to establish a medical dispensary which will be the first of its kind in the region. A hospital is also to be built there eventually

Health conditions were fairly good in the city of Montreal during the two hot summer months, according to Dr S Boucher, city health officer. He pointed out that the few cases of typhoid reported had been contracted in the country. He repeated his warning of the early summer regarding the drinking water and milk in the country. Measles had been nearly wiped out and there were no deaths from this cause during the month of August. Dr Boucher summed up by saying that the proportion of deaths from various contagious diseases, except tuberculosis, is low.

GEORGE HALL

ONTARIO

The following officers have been elected by the Hamilton Medical Society for the ensuing year. President, Dr W J Deadman, First Vice president, Dr P B Macfarlane, Second Vice president, Dr D G McIlwraith, Treasurer, Dr C Gooch, Hon Secretary, Dr J H Sullivan

The members of the Hamilton Medical Society are to be congratulated on their Bulletin which made its first appearance in September. This will be issued monthly, and will aim to supply the members of the Society with up to date information in regard to their activities, as well as news items of interest to the medical profession generally

On September 4th, at a meeting of the Essex County Medical Society held in Windsor, Dr John Oille of Toronto gave a talk on arteriosclerosis and hypertension

The Hastings and Prince Edward County Medical Society met at Sterling on September 11th. Dr R R MacGregor of Kingston gave an address on "The malnourished child"

Dr A. P. Hart of Toronto addressed the North Bay Medical Society on September 12th, his subject being "The physiology and pathology of digestion in infants and its relationship to practical infant feeding"

Dr W G Cosbie of Toronto addressed the Barrie District Medical Society on September 19th, taking as his subject, "Obstetrical injuries and their after results, with special reference to prevention"

At a meeting of the Lincoln County Medical Society held in St Catharines on September 20th, Dr R V B Shier gave a talk on "Post operative care"

The Sault Ste Marie Medical Society met on September 21st, when Dr H S Hutchison of Toronto gave an address on "The treatment of renal disease."

The South Waterloo Medical Society, meeting at Galt on September 21st, was addressed by Dr D'Arcy Frawley of Toronto, his subject being, "The diagnosis and treatment of acute abdominal pelvic conditions."

On September 22nd, the Porcupine District Medical Society met at Timmins. Dr H. McCart of Toronto

gave a talk on "Throat diseases with reference to general practice"

The Hamilton Medical Society will hold their annual clinical day on October 25th. A very interesting program is in course of preparation.

N B GWYN

Appointments to the Faculty of Medicine, University of Western Ontario, for the next session are: Alan Skinner, M.B. (Tor.), Assistant Professor of Anatomy, Carl G. Smith, B.A., Instructor in Anatomy, R. C. Bradley, B.A., Instructor in Biochemistry, G. W. Stanley, M.D., Instructor in Pharmacology, J. G. Dunlop, M.D., Instructor in Pathology and Bacteriology, R. A. Waud, M.D., M.Sc., Ph.D., Instructor in Electrocardiography, A. J. Read, M.D., Instructor in Orthopaedic Surgery, Ivan D. Wilson, M.D., Instructor in Radiology, S. G. Chalk, M.D., M.Sc., and C. S. Tennant, M.D., C.M., Instructors in Psychiatry, A. S. Graham, M.D., Assistant in Anaesthesia, Victoria Hospital, and J. L. Duffy, M.D., C.M., D. H. Nichol, M.D., W. C. Sharpe, M.B., and J. R. Howitt, M.B., Instructors in Medicine.

The following promotions have been made: F. W. Hughes, M.D., from Instructor to Assistant Professor of Medicine, and W. J. McLean, M.B., from Instructor to Associate Professor of Physiotherapy.

The officers of the Western Ontario Academy of Medicine, London, for 1928-29 are: Honorary President, Dr A. J. Grant, President, Dr E. G. Lewis, First Vice President, Dr F. W. Luney, Second Vice President, Dr D. D. Ferguson, Secretary, Dr E. M. Watson, and Treasurer, Dr E. L. Williams.

St Joseph's Hospital, London, has opened a department of physiotherapy and has placed in charge Miss Norah G. Peck, C.S.M.M.G., Eng., a graduate of University College Hospital, London.

J W CRANE

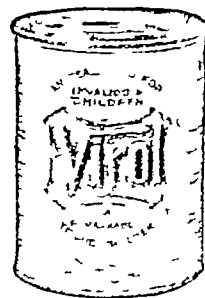
Dr R. B. Jenkins, Edmonton, Alta., Dr F. W. Jackson, Winnipeg, Dr F. S. Leeder, Battleford, Sask., and Dr Eva Mader, Kentville, Nova Scotia, have been appointed to the Connaught Laboratories Fellowships in the School of Hygiene of the University of Toronto.

The fellowships were established last year for the purpose of public health workers in Canada. The appointments are made by the University of Toronto from a list of candidates proposed by the ministers of health in the various provinces.

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Poliomyelitis in Winnipeg

An epidemic of poliomyelitis has appeared in Winnipeg. For three years the city was singularly free, 1925, one case with one death, 1926, no cases, 1927, four cases with one death, but in the middle of July the disease reappeared and up to September 2nd ninety-two cases have been reported with eleven deaths. The worst previous outbreak was in 1920, when forty-seven cases were reported with twelve deaths.

The opening of the schools, which was to have occurred on September 4th, has been postponed until September 17th, and Sunday schools have closed until the disease ceases to have epidemic proportions.

On August 30th an emergency meeting of the Winnipeg Medical Society was held to discuss the situation. More than two hundred doctors were present, and addresses were given by Prof Wm Boyd, Drs Gordon Chown, A. J. Douglas, City Health Officer, Fred Cadham, A. P. MacKinnon, and Dugald McIntyre, Assistant Superintendent of Municipal Hospitals. These six were appointed a committee to prepare articles for the daily press and already one such article has appeared.

The Research Committee is prepared to secure a supply of convalescent serum which may be administered to patients in the pre paralytic stage. It is hoped that the advent of cooler weather will speedily reduce the number of cases.

The completion of the new Nurses' Home at St Boniface Hospital has rendered possible several alterations in the hospital building, chief of which is the making over of Ste Anne's ward as a maternity ward. In the altered ward, which was opened on September 1st, there are three labour rooms and an up to date nursery.

A considerable addition, which will cost \$45,000, is being built over part of the south wing, thus giving five storeys in place of four. The addition will contain an orthopaedic operating room, a plaster room, two laboratories and a research laboratory, a museum, autopsy room, camera room and dark room, a metabolism room and store rooms. The new addition will allow for expansion of the x ray department on the fifth floor of the central block.

The contract for the new wing to the Deer Lodge Hospital, Winnipeg, now operated by the Departments of Health and Soldiers' Civil Reestablishment, will be awarded as soon as possible after the tenders are opened on September 4th. The wing will be built on the east end of the present structure and, with a small power house to be added, will cost \$200,000. Later on a wing

Dr A. E. Cameron, professor of zoology in the University of Saskatchewan, has been appointed to succeed Dr D. S. Patton in the lectureship in medical entomology, University of Edinburgh, Scotland.

Dr Alexander King, who formerly practised at Guernsey, and for several years past in British Columbia, spent the summer at Lake Manitou, Saskatchewan.

Dr G. A. Parkins has recently come to this province and is now associated in practice with Drs. Leask, Black, Burwell, and Young of Moose Jaw.

MANITOBA

of similar dimensions will be added to the other end of the present building, but this will not be done for several years.

Dr Charles Hunter has tendered his resignation as Professor of Medicine in the University of Manitoba. He will, however, continue to take part in the teaching as Associate Professor.

Dr D. A. Stewart, Superintendent of the Manitoba Sanatorium at Ninette, is in Europe where, with other Canadian tuberculosis experts, he will spend two months visiting sanatoria in the south and west of England, in Switzerland and Italy. He will attend the meeting of the British Tuberculosis Congress at London and the World's Anti Tuberculosis Congress at Rome. Special attention is to be paid to methods used in sanatoria for treatment of children. Other western members of the party include, Dr A. B. Alexander, of the King Edward Hospital, Winnipeg, Dr R. G. Ferguson, Medical Superintendent of Hospitals in Saskatchewan, Dr Harvey Boughton, Saskatoon, Dr A. H. Baker, of the Bowness Sanatorium, Alberta, and Dr Lapp, head of the Tranquille Sanatorium, Kamloops.

The fifth annual Gordon Bell Memorial Lecture, under the auspices of the Winnipeg Medical Society, will be given in October, the speaker being Dr J. G. Fitzgerald, Director of the Connaught Laboratories, Toronto.

Dr Geo. Stephens, Superintendent of the Winnipeg General Hospital, returned home on September 16th, after attending the International Hospital Association meeting at Paris.

Dr R. W. Jeffrey, of Monroe, Wash., has located at Carberry, Man.

Dr A. W. S. Harvey is now associated in practice with Drs N. J. Maclean, P. H. Thorlakson and N. H. Blake, of Winnipeg.

Drs C. A. Rice and S. Kobrinsky have been appointed to the honorary attending staff of Grace Hospital, Winnipeg.

A second edition of Dr William Boyd's book on "Surgical Pathology" will appear early in the new year.

Dr Geo. Stephens was elected a trustee of the American Hospital Association at the convention of that body at San Francisco on August 10th.

ROSS MITCHELL

SASKATCHEWAN

Dr W. A. Black has begun practice at Kindersley.

Dr Wm Fotheringham, a graduate of Glasgow, has recently become a Licentiate of the Medical Council of Canada and opened an office at Borden.

Dr H. A. MacLean has begun to practise medicine at Togo.

Dr H. J. Lauden is practising at Warman.

Dr D. Low, for the past two years medical Super-

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NOVA SCOTIA MEDICAL BULLETIN, AUGUST, 1928

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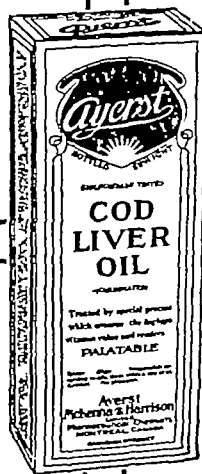
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with various phases of medical practice were introduced in the Legislature. Only a few were ever reported out of committee. Those which did pass were largely in the nature of minor amendments and amplifications of existing regulations. The anti vivisection bill on behalf of dogs, and the anti vaccination bill both died in committee.

The Kentucky State Medical Board has again emerged unscathed from a particularly virulent legislative attack on its whole scope and organization. The "Ripper Bill," as it is known in the Blue Grass State, has appeared perennially for a long time. Adherents of the Board claim that this attack is purely political, and in general the Board of Health has had the backing of the medical profession and of the progressive element of the state.

In Washington, the Parker Bill, granting additional research facilities for the Public Health Service, passed but was vetoed.

Bills empowering the Smithsonian Institution to make recommendations for suitable recognition of research and other workers who risk life or health in the public service, and for granting pensions to the survivors of the yellow fever experiments, were reported out of the House committees before Congress adjourned. They will come up next winter—A summary prepared by the American Association for Medical Progress, *Science News Letter*, July 21, 1928.

For some years past research work on Rocky Mountain spotted fever has been conducted by the Montana State Board of Entomology and the United States Public Health Service in a laboratory made out of an abandoned school house. Now, it is to be carried on in a modern three story building, specially designed for the purpose. The vaccine for the prevention of Rocky Mountain fever, produced here by Spencer and Parker, from the bodies of infected ticks has been

tried out on about 4,000 persons with encouraging results.

A further activity of the laboratory is an attempt to exterminate the disease bearing ticks by the introduction of tick parasites. One and a half million of these will be liberated this year.

The eleventh annual convention of the American Dietetic Association will take place at the Hotel Willard, Washington, D C, from October 29th to 31st. Reports of the various Section Chairmen will be given, embodying suggestions for future development. Some well known physicians will also give addresses. Among these may be mentioned "Pellagra," by Joseph Goldberger, United States Public Health Service, "Nutrition and growth," by Lafayette B Mendel, Yale University, "Dietetic treatment in certain of the epilepsies," by H. Bowle Geyelin, Presbyterian Hospital, New York, "Nutrition and the family in social organizations," by Bailey T Burritt, New York.

Visits will be made to the White House, the Library of Congress, Johns Hopkins Hospital, the Walter Reed Hospital, and the Bureau of Home Economics. A number of sight seeing trips are being planned. It is recommended that those planning to attend this convention secure one way tickets, together with a reduced fare certificate. The railroads have granted return transportation at a fare and a third, provided that 250 certificates are presented.

Dr John Farquhar Fulton, who during the past two years has been working in Dr Harvey Cushing's clinic at the Harvard Medical School, has received a three year appointment to a research fellowship at the University of Oxford, where he will carry on research in physiology under Sir Charles Sherrington, and write on the history of physiology and the bibliography of the works of Robert Boyle.

GENERAL

Tour of the Tuberculosis Specialists

Through the beneficence of the Sun Life Assurance Company of Canada a party of physicians, members of the Canadian Tuberculosis Association, sailed for Europe recently. The majority of them were accompanied by their wives. They will visit Liverpool, Birmingham, Cardiff, Winchester, Alton, London, Paris, Nancy, Florence, Rome, Milan, Venice, and then return via Paris, London, Edinburgh, and Glasgow where they will embark on October 27th for the journey home. During the tour the doctors will have an opportunity of studying methods used to fight tuberculosis in Europe, and will visit the principal hospitals and attend clinics. The tour originated with the gift from the Sun Life Assurance Company of Canada, who presented the Association with thirty scholarships of \$500.00 each. Salaried tuberculosis workers were to be the beneficiaries and the President of the Association, Dr Jabez Elliott, was chosen to lead the party. Dr Elliott was one of the earliest medical directors of a sanatorium in Canada, and at present is on the faculty of the Medical School of the University of Toronto. He also is chairman of the medical examiners of the six chest clinics in Toronto and is associated with St Michael's General Hospital, the Hospital for Sick Children, and Preventorium, all in Toronto.

The International Conference of Red Cross Societies

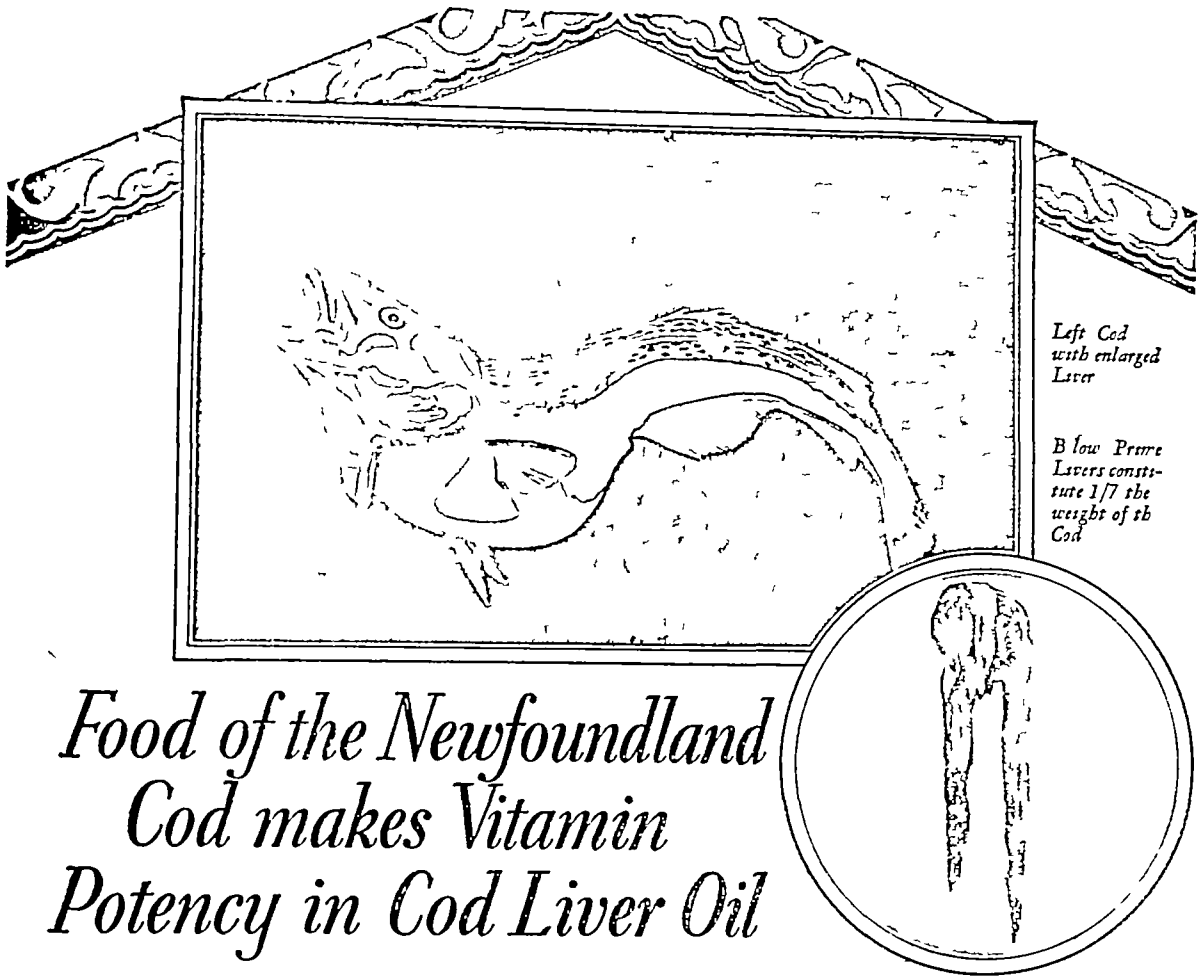
The International Conference of Red Cross Societies, which is held every five years, will convene at the Hague from October 22 to 27, 1928.

Among the topics of interest and importance to be considered are the Red Cross and the protection of the civil population against war gases, attenuation of the evils of a blockade in the case of civil population, the standardization of sanitary equipment, the study of the means to be adopted to lessen war losses, and the relation of the Red Cross to naval warfare.

The new Institute of the History of Medicine at Leyden was inaugurated on June 27th, and is under the scientific direction of Dr J G de Lant, Lecturer on the History of Medicine at the University. The ceremony was presided over by Heer Van Beck Kolonn, representing the Minister of Public Instruction, assisted by the Rector Magnificus, Dr Van Sinck, and the President of the University, Dr de Gyselaar.

Dr de Lant, in his remarks, traced the development of the teaching of Medical History in Holland and the circumstances that led up to the establishment of the Institute. He was followed by M Triet Rozer, the President of the International Society of the History of Medicine, who dwelt on the practical value of the new Institute to students and research scholars, based on his own experience as Professor of the History of Medicine at Louvain.

Dr Ligerist, Professor of the History of Medicine at Leipzig, gave an interesting account of all the institutes for the study of the history of medicine in the world.



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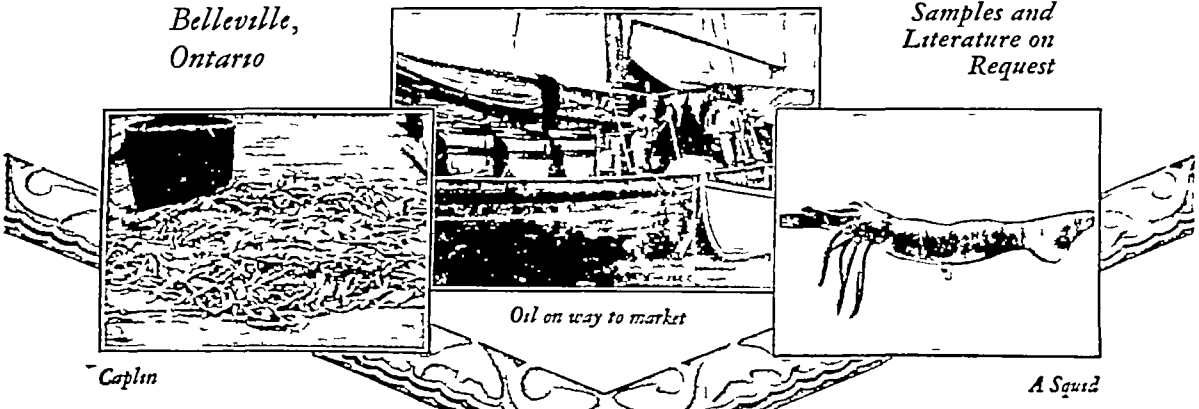
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Book Reviews

Osler's Modern Medicine Vol vi Edited by Thomas McCrae, M.D., and others 964 pages, illustrated Price \$9.00 Messrs Lea & Febiger, Philadelphia, 1928

The third edition of this well known system is now complete. The sixth volume is devoted to diseases of the nervous system, with a concluding chapter on abnormalities of the mind by Edward A. Strecker.

The contributors to this volume are drawn from the leading men in the centres of medical teaching on both sides of the Atlantic. Dr. Lewellys Barker opens with an introduction to the study of disease of the nervous system, with explanations of terms and methods of examination. Diseases of the motor system are considered by W. S. Spiller, and combined system diseases by Dr. Colin K. Russell. Dr. Harvey Cushing contributes a chapter on intracranial tumours. He comments on the perfection of technique in the surgery of brain tumours which has taken place within the last few years, and shows how this requires a special training whose foundations must be laid in the neurological clinic and experimental laboratory for neuropathology. He also contributes a chapter on hydrocephalus.

The chapter on acute encephalitis and brain abscess by the late E. E. Southard has been revised by Dr. J. Ramsay Hunt, and that by the late H. M. Thomas on diseases of the cerebral blood vessels has been revised by Dr. H. M. Thomas, Jr. Diseases of the cerebral nerves are dealt with by Dr. E. W. Taylor, and Dr. Gordon Holmes writes on diseases of the peripheral nerves. The subject of diffuse and focal diseases of the spinal cord is contributed by Sir E. Farquhar Buzzard and Dr. C. P. Symonds, whilst Dr. Smith Eli Jelliffe writes on hysteria.

This volume is a worthy conclusion to a modern authoritative work on medicine. H. E. MACDERMOT

A Text Book of Pathology W. G. MacCallum, Professor of Pathology and Bacteriology, The Johns Hopkins University, XVI and 1177 pages Price, \$10.00 W. B. Saunders Co., Philadelphia and London, Toronto, McAlinsh and Co., 1928

This well known and favourite text book has now reached its fourth edition. It is different in its plan from all others. The basic idea is that all pathological disturbances are the result of some form of injury, or of the immediate or remote reactions of the body to injury. In other words disease is discussed from the standpoint of etiology. On the whole, it has been possible to carry out this conception fairly well, but, of course, the system breaks down when the author comes to discuss conditions, such as Hodgkin's disease and cancer, where causes are still nebulous. One advantage of the plan is that there is no division of the subject into general and special pathology. For reasons that seem sufficient to the author certain topics usually dealt with in text books of pathology have been omitted, such as, heredity, the biology of bacteria and other parasites, malformations, and many diseases of the nervous system. Resistance and immunity are touched upon very briefly. The work does not, therefore, pretend to be exhaustive.

In the present edition almost every chapter has been in part or completely rewritten. So far as possible, all recent advances in our knowledge are mentioned, and any changes of opinion on the part of the author have been recorded. The matter has to some extent been rearranged, and certain of the illustrations have been replaced by better ones.

One need not endorse the scheme on which the book is built up, in order to praise it. The scheme admittedly breaks down in places. Only by the widest

charity in the interpretation of the term "injury" is it possible to regard the plan as consistent. This may be illustrated by the case of the disturbances of the glands of internal secretion and the deficiency diseases. Again, it does not make for clearness to consider the blood, lymph, and circulation in three different places. The book begins with a consideration of the disturbances of the fluids of the body, including local disturbances in the circulation of the blood. In chapter XXIII the general disturbances of the circulation are dealt with under the caption of "obstruction." In chapter XLIII the effects of injuries upon the blood and blood-forming organs are considered. Yet, in spite of such criticisms, the work is an excellent one. In every page the author gives evidence of his learning and wide experience. In the case of debatable matters he gives both sides, but usually indicates the current trends of thought. Where we are still feeling our way he brings out the advances in knowledge up-to-date. The book may, then, be regarded as a safe one. The histological features of the various lesions are given clearly and fully, and are not overwrought. The illustrations are particularly good, and really do illustrate. At the end of each section a list of the chief articles in the literature is given, which, without pretending to be exhaustive, is sufficient. Having in mind that Dr. MacCallum's work is intended chiefly as a text book for students, it may be truthfully said that it admirably meets its purpose. For the advanced worker, too, it is a distinct advantage to have the considered opinions of so outstanding an authority as Professor MacCallum, one who has himself done much to advance the science of disease.

A. G. NICHOLLS

An Address on Surgical Subjects Sir Berkeley Moynihan, Bart, President of the Royal College of Surgeons of England 348 pages, illustrated Price \$6.50 London and Philadelphia W. B. Saunders Co., Canadian agents, McAlinsh & Co., Toronto, 1928

This collection of essays and addresses shows Sir Berkeley Moynihan at his best, a best which is very good indeed. Few if any other surgeons of the day possess in equal degree his gift of clear fluent writing, and none excel him in graceful oratory. He has been heard in Canada and those who listened to his Murphy oration will not readily forget the brilliance of his tribute to that great surgeon, as he described it himself, "his tribute of laurel for honour, and of rosemary for remembrance." That oration is included in this collection, and in some respects is the best. It is an example too of how he used his subject of the moment as a text for surgery in general, above all for his ideals of surgery, for throughout all these papers he strives to place surgery on the highest possible plane. He tries to show that "even supreme excellence in our art is not enough; that surgery is also the most powerful weapon of research ever placed in the hands of man for his own welfare."

He returns again and again to the inspiring influence of Lister, in the opening Hunterian oration, "Hunter's ideals and Lister's practice", in "Lister as a surgeon," in "Lister,—Benefactor of mankind," and it is with Lister in mind that he develops his ideas of the best training for surgery, "If surgery is to be something more than a wonderful craft, if it is to be the instrument of research which I believe it to have been, and to be destined to be in future, those who practise it must have their minds shaped and strengthened by conflict with unsettled problems, not cramped and sterilized by monotonous exercise within a narrow province of static knowledge. The comradeship of laboratory

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workers and clinicians should be intimate and unbroken. Nor can those who serve the same cause in a different atmosphere give to their patients the best aid of medicine and surgery without the help of the scientist. The training of the surgeon must not only allow, it must urge his mind to stray beyond the hard boundaries of old knowledge, over the edge of firm beliefs, into wide territories as yet unexplored and even undivined. In this way only is their escape from the danger which besets the surgeon in the future, the peril of a facile automatism. In this way may the physiologist be brought back from his vagrancies and encouraged to realize that his science best fulfils its destiny when it is applied to the understanding of the functions, normal and aberrant, of the organs of man."

This is assuredly a book which is pleasant to read, and one which combines historical and reflective writing with teaching on some of the surgical problems of the day. H. E. MACDERMOT

The Examination of Patients Nellis B Foster, M.D. Second edition, revised 392 pages, illustrated Price \$4.50 London and Philadelphia, W. B. Saunders Co., Canada, McAlinsh & Co., Toronto, 1928

This book is much more comprehensive than the title would suggest. It not only deals with questioning the patient and physical examination, but also contains an excellent discussion of the essential points of differential diagnosis of diseases of the various systems.

The first chapter gives a splendid outline of the method of taking a subjective history. Next follows a chapter on general physical examination, system by system. The author points out the three commoner sources of errors in diagnosis: (1) incomplete data, *i.e.*, having overlooked some point in examination, (2) misinterpretation of data, (3) faulty data. The commonest source of error is incomplete examination. Valuable hints are continually interspersed amongst methods of examination, for example, "Ten per cent of normal individuals have unequal pupils."

The chapter on Febrile Diseases is really a discussion of the differential diagnosis of the cause of a fever, arranged as "Fever with Rashes," "Fever with Purpuras," with jaundice, with arthritis, with diarrhoea, etc.

The next four or five chapters deal with system examinations and diagnosis, all of which are brief and emphasize only essentials.

The chapter on cardiovascular disease is excellent, except possibly the part on hypertension. He states that, clinically, the problem is to decide whether a case be one of essential hypertension or nephritis with hypertension. One is disappointed that the remainder of the chapter deals only with nephritis.

The last chapter is on tests, with detailed directions for taking plates of the gall bladder. One would like to protest against the icterus index replacing the Van den Bergh reaction. Directions are given for extracting duodenal contents, and doing the Lyon's test. The various tuberculin tests are discussed with their clinical application and excellent illustration. He concludes with the Schuck test. Those in connection with scarlet fever are not included.

Though containing less than four hundred pages, the book is an excellent individual exposition on the subject of diagnosis, both for the student and also for all classes of graduates, general practitioners, internists, and even surgeons. J. O'NEILL

Clinical Medicine Oscar W. Betha, M.D., Ph.D., F.C.S., F.A.C.P. 700 pages, illustrated Price \$8.50 London and Philadelphia, W. B. Saunders Co., Canadian Agents, McAlinsh & Co., Toronto, 1928

This is a general practitioner's book. Witness these words from the preface—

"Most of the literature on the practice of medicine

is based on work in fully equipped hospitals or in the homes of the wealthy where every advantage of modern science is available, while as a matter of fact, the great majority of patients must be treated in homes and under conditions offering limited facilities to aid the physician in his efforts. It has been with this larger group constantly in mind that this book has been written."

Approximately 60 per cent of the work is devoted to treatment and throughout emphasis is laid on the individual rather than the case. The book's pages are plentifully besprinkled with prescriptions, but drugs are not unduly lauded. Probably the chief value of the therapy described lies in the detail with which non-medicinal measures are discussed.

The book does not cover the entire field of medicine, but only "about one hundred of the most common diseases." In this list one is surprised to find a friend of other days, *viz.*, chlorosis. Surely this disease is not common still in Louisiana. Many readers will not be satisfied with the sections on hyperthyroidism and hysteria. Nevertheless Professor Betha's work is readable and instructive. It is well arranged, well printed and well indexed. G. S. YOUNG

The Clinical Examinations of the Lungs E. M. Brockbank, M.D., F.R.C.P., and Albert Ramsbottom, M.D., F.R.C.P. Second edition 112 pages, illustrated Price 5/- net H. K. Lewis & Co., London, 1928

This small book of one hundred and eight pages is an outline of the authors' teaching on the subject of the examination of the lungs and is published for their students at their request. Being primarily for students, it is somewhat dogmatic at times. This may be beneficial in commencing undergraduate teaching.

A short first chapter deals very briefly with the anatomy and physiology of the chest. The second refers to the essential points in connection with the pain of pleurisy, the causes of dyspnoea, cough, fever, rapid pulse, etc., in pulmonary diseases.

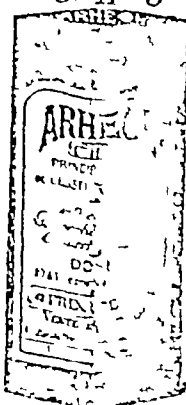
The chapter on inspection is good. The causes of dyspnoea are discussed more fully than in the second chapter. The authors state that a cough frequently arises from disease of any organ supplied by the vagus. Most of us doubt the existence of the stomach cough, and who believes that affections of all of the other abdominal viscera supplied by the vagus can cause a cough? In discussing the different types of cough, that due to passive congestion in cardiac disease might receive more emphasis, so might the offensive odour of the sputum in lung abscess and the hæmoptysis of mitral stenosis.

The discussion on palpation and percussion is very good. The chapter on auscultation of breath sounds is orthodox. The varying classifications of adventitious respiratory sounds must be very confusing to students, and possibly to graduates as well. It is difficult to see the justification for classing rhonchi as moist sounds. Certainly some or most rhonchi are due to a narrowing of air passages, due either to swelling or spasm of the bronchial wall. Some, of course, are due to exudate or other material within the passage. Then too, most writers on diagnosis classify crepitations as fine (moist) râles, and coarse râles are called "bubbling." The authors restrict the term râle to bubbling or coarse râles, arguing that the crepitations should be restricted to noises produced in alveoli. Who knows whether crepitations are produced in alveoli or terminal bronchioles? J. O'NEILL

Text-Book of Infectious Diseases E. W. Goodall, O.B.E., M.D., B.S., Member of the General Nursing Council of England and Wales. Third edition 718 pages, 26 illustrations Price 30/- net H. K. Lewis & Co., London, W.C.1, 1928

The subject of infectious diseases is one in which our knowledge is undergoing continual change. Books

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devoted to it therefore require frequent revision, and the volume under review is a new edition to meet such a need. Dr Goodall shows to what proportions the problems of immunology and bacteriology alone have grown, though still as he thinks, without having made much headway. Conflicting statements are made on such a point, for example, as the causation of epidemic poliomyelitis: one school holds that it is due to a filter passing virus, another that a streptococcus is responsible.

In addition to noting the general trend of investigations into the cause and treatment of these diseases Dr Goodall has thought it wise to devote more space to epidemiology, since not only is a knowledge of this subject demanded of those seeking a diploma of public health, but in his opinion the medical student should be taught how important it is to understand the behaviour of diseases in the mass quite as much as in the individual.

The text is clearly and simply written and should from its arrangement commend itself particularly to students. The photographic illustrations of eruptions and rashes are as good as pictures in black and white can be of subjects in colour.

The book may be thoroughly recommended for its clear and comprehensive presentation of modern views on infectious diseases.

H. E. MACDERMOT

Manual of Otolaryngology Gorham Bacon, A.B., M.D., F.A.C.S., and Truman Laurance Saunders, A.B., M.D., F.A.C.S. 576 pages, 192 illustrations and 2 plates. Price \$4.50. Lea & Febiger, Philadelphia, 1928.

This volume presents an admirable outline of the known facts that daily confront the otologist and the authors have succeeded to an unusual degree in giving a concise treatise on the practical problems of otology.

As stated in the preface, the original purpose was to produce a text book for students as well as a ready reference for the busy general practitioner, and in both cases this has been achieved. Everyone preparing to practise otology should make an effort to acquire a thorough knowledge of the ear and the chapters on anatomy and physiology are well presented both for the student and for those specializing in this line of work.

The subject matter has been revised and brought up to date and a number of proved therapeutic methods introduced. Some of the newer subjects that have been given attention are clearly outlined in the text, such as, the electric audiometer, insulin in the treatment of diabetic patients suffering from mastoiditis, blood transfusion in suppurative ear disease, and the sinus thrombosis manometer test.

On the whole the book is very well balanced and logically arranged. The chapters covering the suppurative diseases of the ear are especially well presented both in the acute and chronic stages and also those on intracranial complications.

Considerable space is given towards the end of the book on deaf mutism, a subject often neglected in works of this kind. One or two good suggestions are given in the appendix on preparing and staining smears, especially for the streptococcus capsulatus.

If one wished to be critical some of the illustrations might be said to leave something to be desired. For instance the coloured plate showing a normal drum does not picture the pearly grey appearance one is accustomed to see. This might seem superfluous to a practised otologist but to a student it is a point worth while remembering.

G. E. TREMBLE

Studies in the Psychology of Sex. Volume VII. Eonism and other Supplementary Studies Havelock Ellis. 539 pages. \$5.50. F. A. Davis Company, Philadelphia, 1928.

The publication of this volume completes the well-known series on the psychology of sex by Havelock Ellis, the best known and most comprehensive work on

the subject in the English language. The major problems of sexual life have been discussed in the preceding six volumes and the present one is composed partly of fragments left over from those and partly of studies which, although not wholly sexual, have sexual aspects and relationships.

The first chapter, "Eonism," deals with an interesting anomaly of conduct, namely, the tendency to dress and behave like one of the opposite sex, although not sexually inverted. According to the author's conception, most of such cases have not only no tendency towards homosexuality but feel a profound repugnance to that anomaly. He states that minor degrees of "Eonism" are common, especially in women and at an early age, and one might well have hoped for much discussion of the widespread mannish tendencies in dress and conduct in what seem to be "normal" women at the present time. It is interesting to reflect that a tithe of similar feminine trends in the male would be regarded as very abnormal indeed.

"Undinism" is a study of what may be called vesical psychology. A learned account is given of the influence of water and especially of urination on humanity in primitive and modern times, and also of their sexual aspects. Reference is made to legends and customs collected amongst the Indians of British Columbia, many of which, it is said, have only been published in full in German. Strange, if true! In a short chapter, "The Menstrual Curve of Sexual Impulse," a subject on which very little reliable information seems to be available. On the basis of a very few cases and records, Ellis takes the following points as having been established to a degree: (1) the regular existence in women of a menstrual wave of sexual desire, and (2) the occurrence in that wave of two crests, of which the second roughly corresponds to the period of *Mittelschmerz*. One readily agrees with the statement of the necessity for further careful observations.

Other studies of less general interest are "The Doctrine of Erogenic Zones," "The Mechanism of Sexual Deviation," "The Synthesis of Dreams," "The Conception of Narcissism," and "Kleptomania," that is, stealing associated with sexual excitement. The final study, "The History of Marriage," contains some interesting comments on marriage and married life.

It is worthy of mention as a sign of the times regarding a book on sex that the author has seen fit to restore in the preface an acknowledgment of his wife's help, which he removed from later editions of the first volume, to anticipate possible comment and criticism. With regard to sexual topics to day there would be ready and, in some quarters, almost overdone acceptance of the dictum of Dr. Westermarck, "the concealment of truth is the only indecorum known to science."

This volume, like the preceding ones, is valuable for a wealth of references, literary, historical, and anthropological, and is a worthy ending of a great work. The previous Studies are so well known that it is needless to mention the interest and value the present volume will have for physicians, psychologists, and others whose concern is with human problems.

DAVID SLIGHT

BOOKS RECEIVED

The Healers B. Liber. 454 pages. Price \$3.00. Rational Living, New York, 1928.

The Springtime of Physic Laurence D. Redway, M.D. 68 pages. Price \$2.00. Int. Journal of Surgery Co., 18 East 41st St., New York, 1928.

Rules for Recovery From Tuberculosis Lawrason Brown, M.D. Fifth edition, revised. 244 pages. Price \$1.50 net. Lea & Febiger, Philadelphia, 1928.

Some Principles of Diagnosis, Prognosis and Treatment Robert Hutchison, M.D., F.R.C.P. 54 pages. Price 2/6 net. John Wright & Sons, Bristol, 1928.

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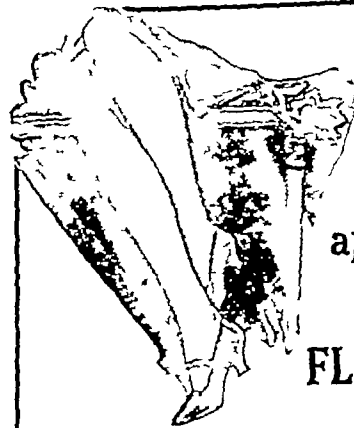
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MUTHANOL (Box of 10 ampoules) (Box of 10 suppositories)	Radiferous hydroxyde of Bismuth in suspension in oil for intramuscular injections	Syphilis Bismutho-Therapy Syphilis in all its forms and stages and also nervous syphilis	One 2 c c ampoule every second or third day in series of 10 Same for suppositories
PANBILINE (Pills and Liquid)	Hepatic and Biliary Extracts — Associated with Boldo Extracts, Podophyllin and Glycerine	Constipation, Intestinal Auto-intoxication Cholæmia Gastro-enteritis Hepaticolic Dyspepsia, Jaundice etc Arterio-sclerosis	2 to 12 pills a day at the beginning of meals or 2 to 12 teaspoonfuls of liquid
PEPTALMINE (Sugared Pills and Granulated)	Peptones of meat and fish with extracts of eggs and milk — also with magnesia.	Urticaria Strophulus Prurigo Eczema Digestive Troubles, Migraines, Diarrhea	Two tablets, one hour before meals or two teaspoonfuls of granule one hour before meals Children half dose
FRAISSE FERRUGINOUS SERUM (Boxes of 12 Ampoules and Drops)	Iron Cacodylate associated to Sodium Glycero-phosphate and Strychnine Cacodylate	Dynamic - Stimulant and Powerful Auxillary to deglobulisation in Anemia Chlorosis Asthenia etc	Painless Subcutaneous injection daily with rest between treatment.
TRICALCINE (Powder Tablets, Wafers and Granulated)	Assimilable Calcium Salts Also associated with Adrenaline Fluor and Methyarsinate	Scientific Rational Treatment of Pulmonary Osseus, Renal and Lymphatic Tuberculosis Rickets, Scrofulosis, Pregnancy-lactation	A measure of powder or one tablet or wafer at each meal Children half dose.

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and the proper point for its attack

Is constipation a cause or an effect? This question is occupying much attention among physicians today, for constipation and all the symptoms surrounding it continue to occupy as large a place as ever in human life, and in the doctor's daily practice.

"Constipation is like a headache," argues one authority, "simply a symptom of some underlying physical error or of a proper habit of personal hygiene. Worry, inadequate exercise, faulty eating habits, or the habitual use of laxative drugs—these are all influences which produce intestinal impairment."

But if constipation is an effect, it is also a cause. It often causes indigestion, heartburn, bad taste, acid eructations, suppurative diseases of the skin. Careful investigators have concluded that chronic cases of constipation almost invariably produce serious affections of the nervous system—irritability, headache, insomnia, melancholia and what perhaps might be termed *mental stasis*.

CAUSE and effect—action and reaction—a vicious circle. Somewhere the physician must step in and break it up. The authorities cited above point out that thorough investigation of the intestinal tract is essential. The treatment for constipation, they assert, is often all that is required to correct neuros-thenic conditions—"A proper hygiene and therapy of the intes-

tinal tract will often be the deciding factor in differential diagnosis."

For a laxative that does its work easily and naturally many physicians recommend fresh yeast.

Yeast has these advantages. It tends to soften the fecal masses and to increase their bulk and moisture. It diminishes putrefaction and gently stimulates the bowel muscle to perform its function—precisely opposite to the effect of cathartics.

WHILE investigation has shown, in the words of one authority, "that intestinal antiseptics diminish the ability of the intestine to destroy bacteria" the action of fresh yeast is just the contrary. Eaten daily in sufficient quantity, yeast combats the development of hostile types of bacteria in the intestine.

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Physicians usually suggest three cakes daily, one before each meal or between meals. Yeast may be eaten plain or with a sprinkle of salt, spread on crackers, or suspended in milk or water. For constipation it is most effective when dissolved in hot (not scalding) water, one cake before each meal and at bedtime.

A copy of the latest brochure on yeast therapy containing a bibliography of articles and references on the subject will gladly be mailed on your request. The Fleischmann Company, Dept. 473, 208 Simeoe St., Toronto, Ont.

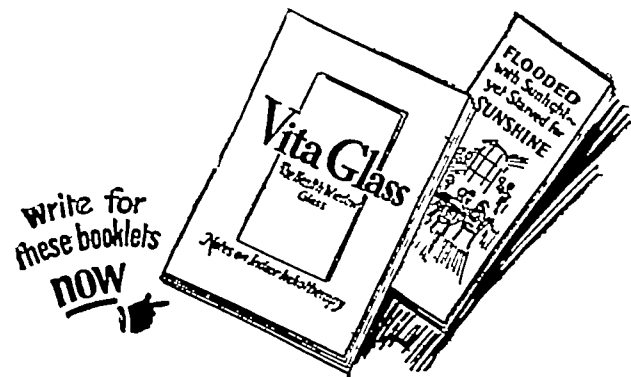
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Hagenback Burkhardt report a case of *esophageal stricture* in a boy of four which followed the drinking of a solution of caustic potash. One Gm of Fibrolysin was injected every second day under the skin of the back near the spine. The dose was later increased to 15 Gm. After a few injections it was found, upon sounding, that the stricture was relaxing and that there was a corresponding amelioration of the symptoms.

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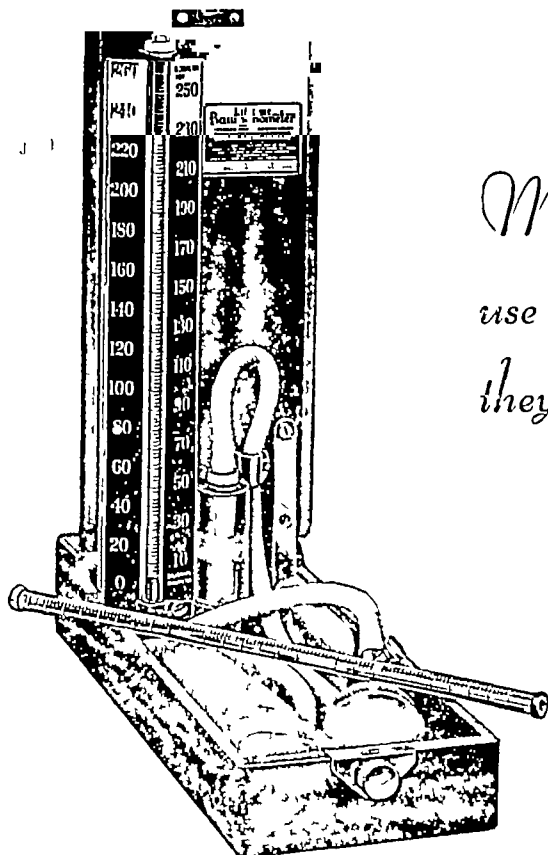
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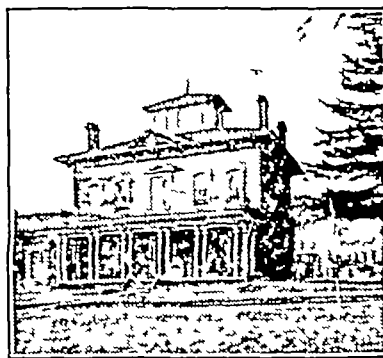
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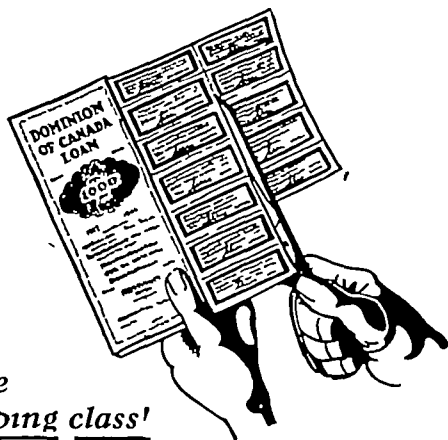
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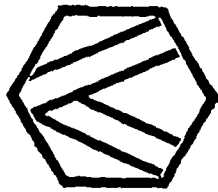
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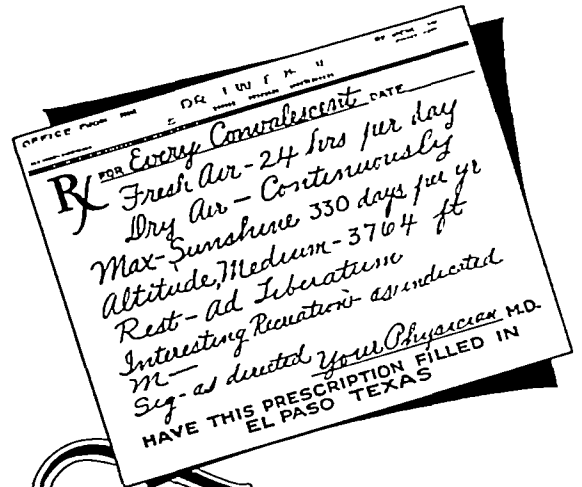
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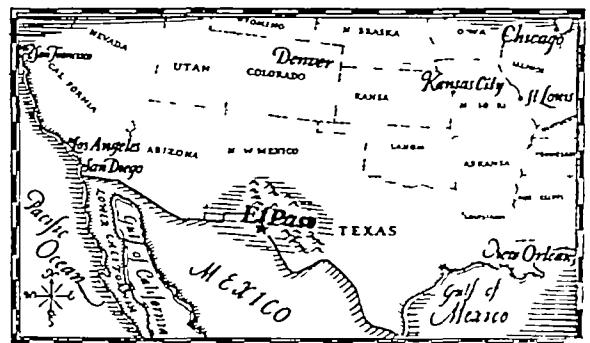
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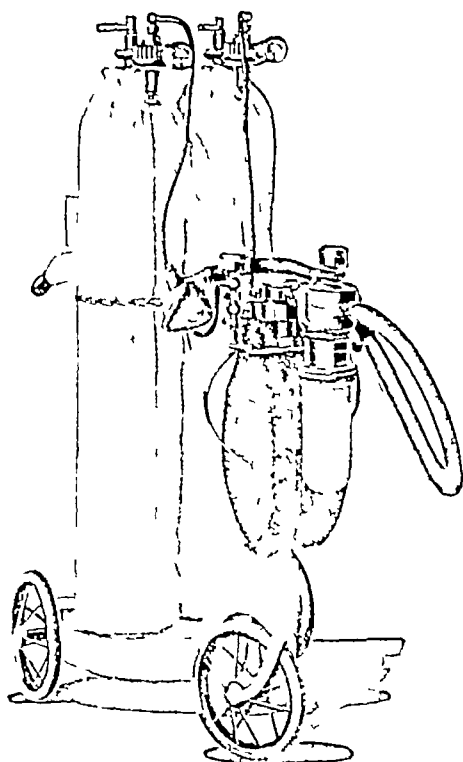
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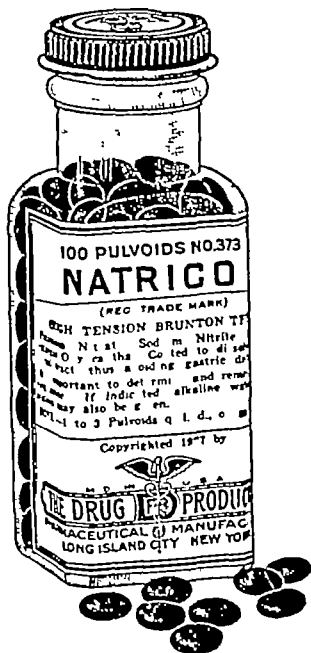
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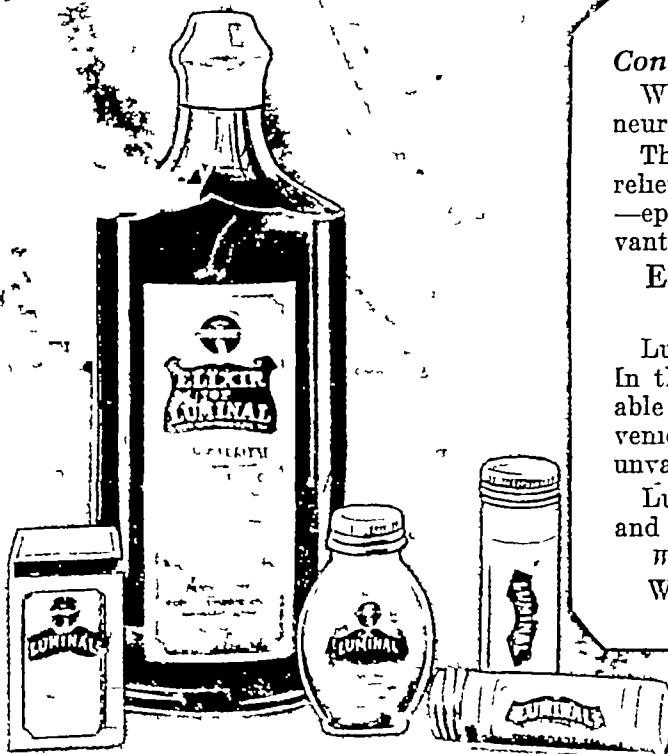
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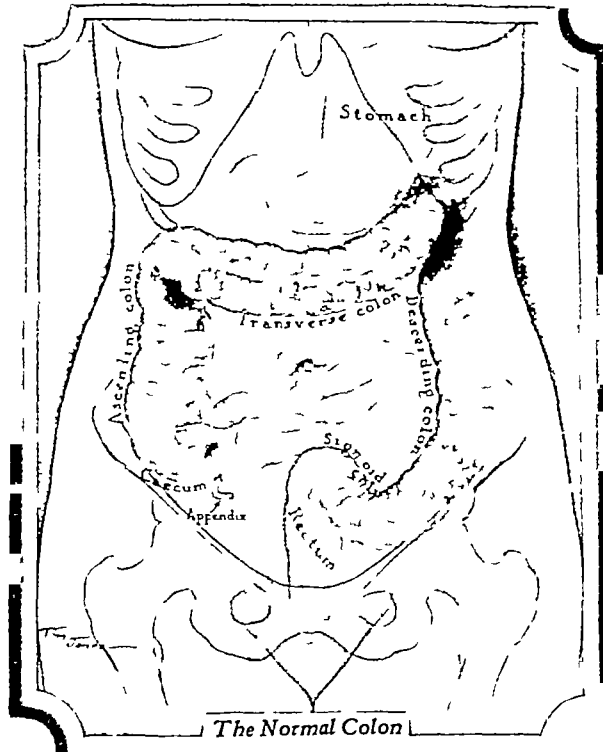
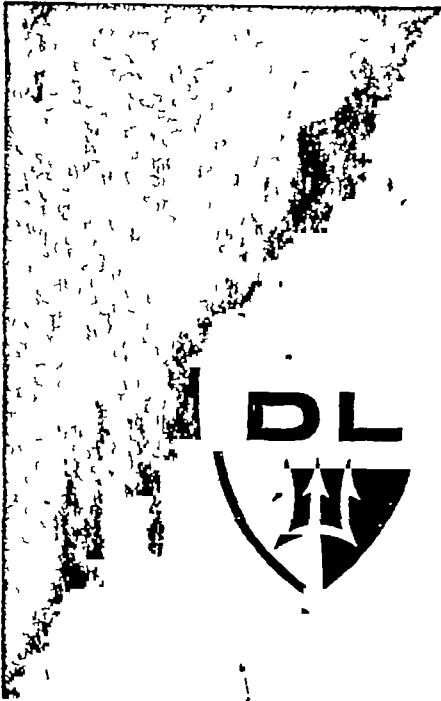
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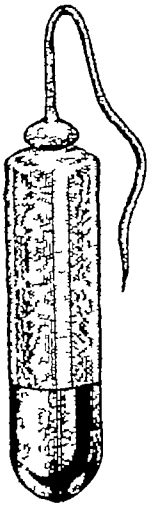
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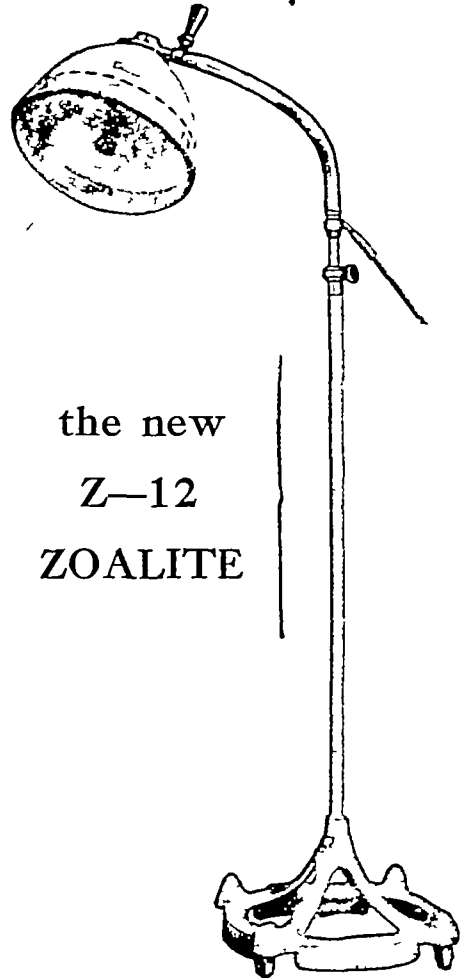
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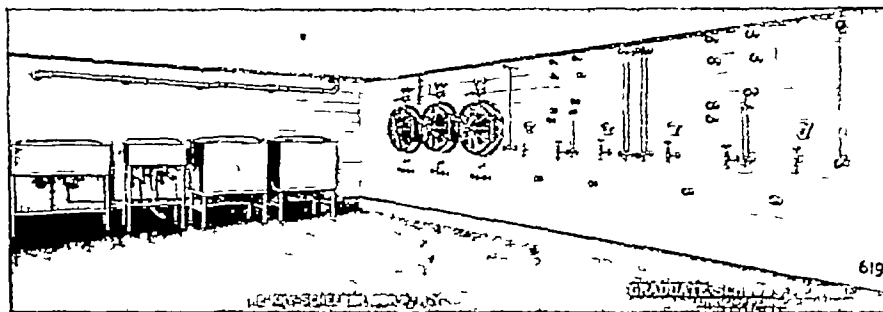
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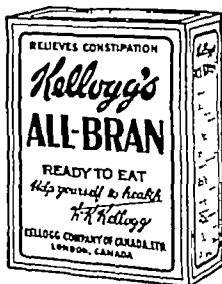
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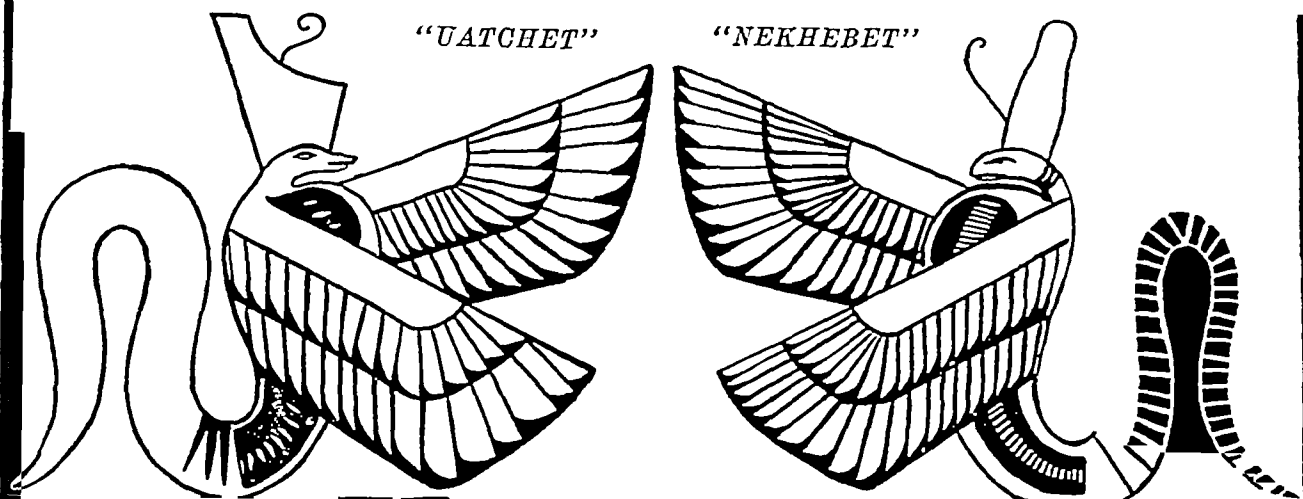
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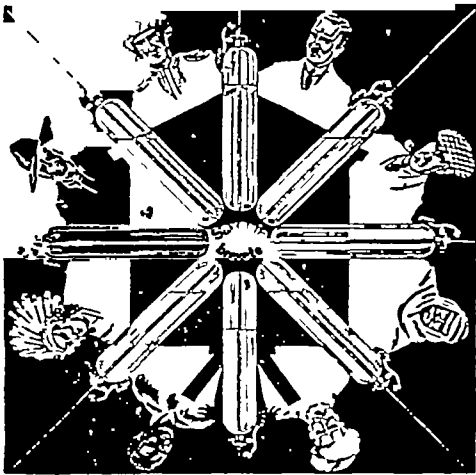


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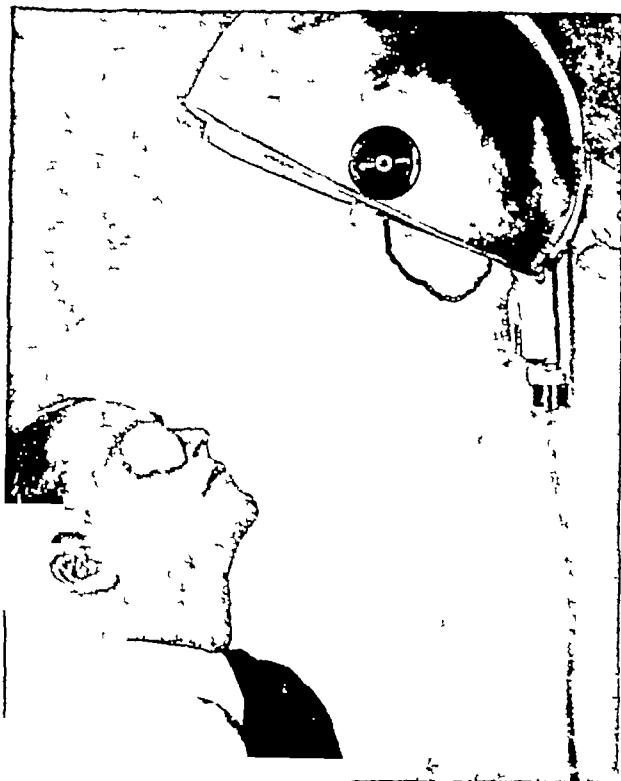
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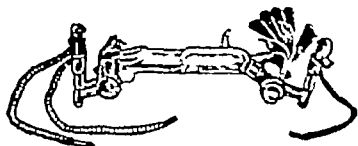
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The Canadian Medical Association Journal

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TORONTO, DECEMBER, 1928

No 6

An Address

ON

REFLECTIONS OF AN ANÆSTHETIST*

By W B HOWELL, M.D.,

*Chief Anæsthetist, Royal Victoria Hospital,
Montreal*

MAY I be allowed first of all to express the very great pleasure which we members of the Canadian Society of Anæsthetists feel in having this opportunity to hold a joint meeting with the members of the Eastern Society. Nothing but good for ourselves and our specialty can come of such gatherings, and I earnestly hope that they will become a regular institution. No more appropriate place than this interesting old city could have been chosen for a meeting like this—firstly, because of its associations with the history of anæsthesia, and secondly because it was here that your forefathers and ours laid the best of all foundations of a lasting friendship by the time-honoured process of having a good stand-up fight.

I have chosen for the subject of my address some of the thoughts which have of late become more or less regular visitors to what I call my mind. There are other thoughts, illicit visitors, that come to me in moments of exasperation and depression. About these, from motives of prudence, I shall say nothing. If the day ever comes when I shall be able to retire, I should like to publish them in the form of a valedictory to the medical profession. That will be my swan song.

Now in the first place, what do I really think about our specialty? If I had my life to live

over again would I be an anæsthetist? My answer is unhesitatingly "Yes." I know that there are certain disadvantages which are not found in other specialties, but in my opinion they are far outweighed by one great advantage. Because nearly all surgical operations are performed in the morning or early afternoon we have a certain amount of that inestimable boon, leisure. We can keep ourselves familiar with everything that is worth reading in our specialty, and yet have time at our disposal for something else than the business of earning our daily bread. It requires all my little stock of moral courage, in such a strenuous age, to speak of leisure in this way. I may confess here that I am in no way impressed by the strenuous man who works ten or twelve hours a day. I have come to believe that when a working day lasts longer than eight hours the quality of the work for the whole day suffers. So I feel rather sorry for my strenuous friend. He may work early and late because he has erected the doctrine of "hustle" into a fetish or he may be a successful doctor overdriven by his patients. Whatever the reason, he puts an excessive amount of time and energy into doing work which is not his best. Let him be careful not to take the cab-horse for his model lest, he also find himself with a drooping head and a range of vision limited to the road at his feet. In the course of time my strenuous friend will, no doubt reap his reward and achieve the objects of his am-

* The Presidential Address before the Joint Session of the Eastern Society of Anæsthetists and the Canadian Society of Anæsthetists, Boston, October 8-12, 1928.

largely a process of discarding wrong old practices in favour of wrong new ones

I have recently been reading the highly entertaining preface to Bernard Shaw's "Doctor's Dilemma," and learning what villains we doctors are. "The medical profession," he says, "has not a high character, it has an infamous character." And again, "It is simply unscientific to allege or believe that doctors do not, under existing circumstances, perform unnecessary operations." Now, it is of course true that there are rascals in our profession, as there are in all other walks of life, and that there is a certain number of operations done from a mixture of unworthy motives, chief among which are the need of money and the wish for practice or advertisement. But in large hospitals there is a powerful deterrent about which Bernard Shaw was ignorant and that is the watchful eyes which are focussed on the surgeon when he is in the operating room. If he makes a mistake it is known in a few minutes all over the hospital. If there is a suspicion that he has operated without good reason every one knows, and no one gives him the benefit of the doubt. The light which shines upon his reputation is fiercely bright. The best antiseptic of the operating room is the criticism of colleagues, the wholesome influence of which is reinforced by the fear of public opinion as crystallized in the minds of remote beings known as "governors."

Bernard Shaw in the preface from which I have quoted asks the question "Are doctors scientific?" In unequivocal language he answers his own question in the negative. "As a matter of fact," he says, "the rank and file of doctors are no more scientific than their tailors." Whether we think Shaw right or wrong depends on what meaning we attach to the word "science." If we mean by "men of science" men who are intellectually honest, who want to find out the truth and to publish it stripped of all the obscurity which tradition, imagination, prejudice and self-interest throw over it, then I think we must be careful how we pride ourselves on being scientific. It is because we do not vitally care whether we have truth itself served up to us, or error dressed up to look more or less like truth, that medical literature in journals and books has attained its present monstrous proportions. In spite

of our training in science ours is the most credulous of professions.

A year or two ago I read in a leading French medical journal an address given by one of the most famous surgeons in Europe upon the subject of general anaesthesia by the spinal injection of stovaine. For twenty years he had used this method of anaesthesia to the exclusion of all others, in every kind of operation in general surgery "sans accident, sans mortalité." Now, having had a fairly wide experience of general and spinal anaesthesia, I confess I was a little incredulous. Could anyone, I asked myself, carry on a large surgical practice for twenty years, and never have an "accident" or a death on the table? If he had had such a death or an accident could he be quite sure, in view of the fact that he was using the spinal injection of stovaine for general anaesthesia, that the anaesthetic played no part in it? It was a good deal to ask one to believe. But what sort of anaesthesia did he get? On this point I received enlightenment from a friend who had seen the great man operate upon a patient with cancer of the breast. "The patient," he said, "suffered a great deal of pain during the operation."

Here is another example of the truth which is not the whole truth. A distinguished surgeon and teacher of surgery some years ago operated within the space of a month or two upon four patients, who by reason of intemperate habits, obesity, and disease of the lungs were considered unsuitable for general anaesthesia. Three of them were given a spinal anaesthetic and made excellent recoveries. An attempt was made to give the fourth a spinal injection but resulted in failure owing to the impossibility of introducing the needle into the subdural space. He was then given ether and made as good a recovery as any of the other three. Now the surgeon reported the first three cases and said nothing about the fourth although his paper was written to show the place of spinal anaesthesia in certain operations where general anaesthesia is contraindicated.

Had Bernard Shaw thought of turning to medical writings for evidence to support his statement that we are no more scientific than our tailors I am afraid he would not have had to search far. He would have found it in the slipshod use of language which has unfortun-

ately become so common, and which can arise from no other cause than slovenly ways of thinking. As an example of what I mean I shall quote the following sentence which is taken from an article written by a member of the surgical staff of one of the great clinics of North America: "The consideration of operation in the presence of the degenerative cardiac diseases must be individualized and based entirely on the prognosis of the particular type of disease as ascertained by clinical and electrocardiographic studies, considered in conjunction with the urgency of the operation and the effect on the cardio-vascular system of removal of the surgical burden." Now, what I ask, is all this about? The use of the word "individualized" I find especially confusing. I looked up the word in the dictionary, and found that it means, "to give individual character to, to specify," and I wondered how one can individualize a consideration.

Another example comes, I regret to say, from a paper written by an anæsthetist. "Respiration during induction," he writes, "may terminate in apnoea even though they (the patients) are still too light to initiate surgical procedure." Passing over the colloquial sense in which the word "light" is used, we have here a statement from which we are justified in inferring that when the patients are more deeply under the influence of ether they will begin to operate upon themselves.

I have never heard any plausible explanation of the confusion of tongues which put a stop to the building of the Tower of Babel. My own theory is that everyone employed upon that work adopted the position of Humpty Dumpty in "Through the Looking-Glass." "When I use a word," said that bold philologist, "it means just what I choose it to mean, neither more nor less."

In this same spirit we have dealt with the

word "pathology." Originally it meant, if we may judge by its derivation, "a discourse on disease." It is now also a synonym for "disease." A patient with bronchitis has "lung pathology." To realize fully how confusing is this sort of innovation we have only to subject other words ending in "ology" to the same treatment. Theology becomes a synonym for God, and the Revised Prayer Book of the future will contain a creed commencing with "I believe in theology." An atheist will be one who "does not believe in theology." "Phrenology" will come to mean "mind," and a madman will be one who has "gone out of his phrenology." If by the time he recovers, the word "physiology" has acquired the meaning of "health," he will be said to have recovered his "phrenological physiology." Shall we be justified in feeling sorry for him if he relapses?

It is no excuse for writing carelessly to plead that one has not time to do better. Readers do not hear the excuse. What is badly expressed they find difficult to understand, and will not bother to read. "If your language is jargon," says a great modern teacher, "your intellect, if not your whole character, will almost certainly correspond. Where your mind should go straight, it will dodge, the difficulties it should approach with a fair front, and grip with a firm hand, it will be seeking to evade or circumvent. For the Style is the Man, and where a man's treasure is, there his heart, and his brain, and his writing, will be also."

There are several other subjects about which I should like to speak, but I refrain out of consideration for the feelings of the gentlemen who have arranged the program of this meeting. I know that to them long-windedness is the unpardonable sin. I hope I have not offended too deeply.

A Medical Family—In August, 1828, Matthew Baulhe Gairdner became a licentiate of the Royal College of Surgeons of Edinburgh, at the early age of 19, he graduated M.D. at the University of Edinburgh two years later, and became F.R.C.S.Ed. in 1858, he died in 1888. His eldest son, James, graduated M.B., C.M.Ed. in 1867, proceeded M.D. in 1873, and has acted as medical officer of Crieff Parish in Perthshire for more than sixty years. The professional practice of father and son has thus

covered more than a century. It would be interesting to know if this record can be approached by any other medical family. Dr. James Gairdner's younger brother, Matthew William Gairdner, graduated M.B.Ed. and obtained the diploma of L.R.C.S.Ed. in 1871, he resides at Cheltenham, and his son, Alan Campbell Gairdner, is a medical graduate of Oxford and obtained the F.R.C.S. Eng. this summer—*Brit. M. J.* 1928, ii, 583.

An Address ON THE FIELD OF NEUROSURGERY*

By WILDER PENFIELD, M.D., B.Sc. (Oxon),

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THE differences between the American and Canadian medical profession have little to do with science and much with tradition and background. For me, to leave the one and enter the other is made easier by years of medical study in Great Britain, and because of the fact that I can claim as my teacher and friend, a great Canadian, Sir William Osler.

Such a change is apt to cause one to look questioningly at the divisions between the ever more specialized branches of our profession. New knowledge, and a multitude of new technical procedures, have made it impossible for any man to master all of the intricacies of medical science, even though he were endowed with the many-sided capacity of Leonardo Da Vinci, or John Hunter. But a fair and efficient adjustment even between medicine and surgery, has long offered difficulty. It is my desire to speak briefly of this relationship, at least in so far as it concerns the treatment of diseases of the nervous system.

Neurosurgery is perhaps the youngest of medical specialties. Operations upon the central nervous system were naturally doomed to failure until Lister had given us the secret of the control of sepsis, and Ferrier had provided the clue to localization of function in the brain, for sepsis within the meninges spells death and blind exploration may mean paralysis.

Neurologists who early saw the goal to be attained called upon surgeons who did not understand the goal and who were ignorant of the physiology of the nervous system. The results were terrible and the profession gradually concluded that the unfortunate patients might as well be allowed to die in their own way. This attitude, which can be dispelled only by demonstrated results, lingers still in many localities.

Effective neurosurgery may be said to begin

with Sir Victor Horsley. He started his professional career as a surgeon but before he began his work upon the human nervous system he had made of himself a neuropsychologist, and years of experimental surgery had enabled him to develop a technique for such operations. With his use of bone wax, heat, and bits of muscle for hæmostasis, and his daring approach to all regions of the brain and spinal cord Horsley was a pioneer, and must always be considered the great figure in neurosurgery. MacEwen, of Glasgow, at about the same time demonstrated the proper treatment of abscesses of the brain, and left behind him an almost unbelievably low mortality record in the treatment of this affliction.

Following Horsley, Cushing has refined the methods of neurosurgery and has demonstrated once and for all that these operations may be done with a low mortality by a specialized team. In his clinic it was first proved that simple craniotomy could be done with little more risk than that involved in coelotomy. Dr. Cushing's statistics have turned a new page in the surgery of tumours of the brain and hypophysis, and there are a score of his pupils scattered through America and Europe, restricting their work to this type of surgery and reproducing his results according to their several ability.

In Philadelphia the fortunately combined efforts of a neurologist, Dr. Spiller, and a neurosurgeon, Dr. Frazier, have provided us with a permanent cure for trigeminal neuralgia by differential section of the posterior root, a procedure which, in experienced hands, has practically no operative mortality. They have also given us another means of liberating patients from unbearable pain, *i.e.*, chordotomy, or section of the tracts which conduct pain in the spinal cord.

Dandy has provided us with a new method of cerebral localization, *i.e.*, roentgenography of the cranial cavity after direct ventricular re-

* Delivered before the Montreal Medico-Chirurgical Society, November 2, 1928.

placement of fluid by air or after similar spinal replacement. Thanks to this method, which should, however, be used only in doubtful cases, the diagnosis of unlocalized brain tumour is now practically never justified.

Such injections of air into the spinal canal may also be used as a specific cure for traumatic meningeal headache. There are many more advances in the field of the central nervous system and also the peripheral and sympathetic nervous system which may not be mentioned here.

Thanks to peculiar conditions in American professional and university life it has been possible for an ever increasing group of men to confine their activity to neurosurgery. The result has been a rapid expansion of this specialty. In one western city of the United States there are at present seven neurosurgeons, only one of whom is dependent upon a university budget for his income.

On the continent of Europe on the other hand, there has been no such specialization. Every general surgeon has held himself ready to do any operation upon the nervous system which may, by chance, be entrusted to him. The result has been little or no advance in surgical therapy. At the same time neurology on the continent seems to have failed to fulfill the brilliant promise of such clinicians as Marie, Déjeune and Oppenheim. The university chairs created for combined neurology and psychiatry have come gradually to be occupied by men whose interest is largely psychiatry.

In two neurological clinics, however, which are perhaps the most distinguished on the continent to-day, a new stand has been taken. Foerster, Professor of Neurology in Breslau, now carries out all of his own operations, and has become the leading and almost the only neurosurgeon in Germany. Brouwer, of Amsterdam, has induced his native city to send one of his assistants abroad for training in neurosurgery that he may return and operate within the university neurological clinic.

The future of neurology and the future of neurosurgery alike demand that these two specialties be combined in one. Herein lies salvation and guidance for both. A surgeon who operates upon the nervous system without

studying both the subject of neurology in general, and the neurological problems of his patient in particular, works under too great a handicap, regardless of his manual dexterity. The prerequisite training is similar for neurology and neurosurgery, and neither can do without the other. It is true that not every neurologist is in a position to operate and likewise the surgeon who may spend two to five hours upon his feet in each major operation finds it quite impossible to treat non-operative neurological cases. There must be a professional subdivision of the material treated.

The neuropathological, neurophysiological, and clinical interests of medicine and surgery must be identical. The common meeting ground is above all the neuropathological laboratory. Comparative segregation of neurology and neurosurgery with their own methods of research and study is the *sine qua non* of future advance.

On the other hand, it is true that too great specialization is dangerous, and neurology and neurosurgery need the steadying influence of an association with general medicine and surgery, which should be as intimate as hospital life will permit. Aside from the clinic, the closest contact which this double specialty makes with surgery is through the operating room, with medicine through the research laboratory.

The field of neurosurgery, both now and in the future, should not be confined to tumours of the nervous system and the douloureux as is the case in some clinics. On the contrary, it should include the prevention and the cure of traumatic epilepsy, control of cardiovascular pain and of intractable pain of all types, traumatic headaches and some types of migraine, birth hæmorrhage and the ensuing epilepsy, peripheral nerve injuries and even some cases of pyogenic meningitis and hydrocephalus. These and other involvements of the nervous system open up a wide and much neglected field of activity.

The future promises much. New methods will surely solve many of the unsolved problems. In no other department of medicine is the need for new work more challenging, and in my opinion nowhere else is the discovery of scientific gold so certain.

ULCERATIVE COLITIS*

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THE subject of ulcerative colitis has received a great deal of attention in the medical literature of all countries during the past decade. In reviewing the English, German, French and American literature on this disease, one is struck by the similarity of the articles. It seems obvious that these writers from various countries are all dealing with the same condition, and not, as has been suggested, with different diseases brought under the same name—ulcerative colitis. The term is undoubtedly unsatisfactory from the etiological standpoint, but the condition has been so adequately described, both in regard to its pathology and clinical manifestations, that no confusion should exist regarding the condition it is intended to designate.

One can summarize the present state of our knowledge of the disease in this way. Ulcerative colitis is a disease which is essentially chronic, but is subject to acute or sub-acute exacerbations. The exact etiological factor is unknown, though it is almost universally agreed that it is an infectious disease of which the specific micro-organism has not been definitely isolated. The pathological lesion is typical and constant, being an erosion involving only the superficial layers of the mucosa in the earlier stages, but associated with œdema, congestion, and leucocytic infiltration of the entire bowel wall in the more advanced cases. While the whole length of the large bowel is frequently involved, the brunt of the disease is carried by the rectum and sigmoid. The clinical manifestations are diarrhœa with from six to thirty stools a day, which contain blood, pus, and mucus. A varying degree of secondary anæmia is always present. Loss of weight, in spite of a fairly good appetite, a slight temperature, leucocytosis, and cramp-like abdominal pain relieved by evacuations, are symptoms of minor diagnostic value. The sig-

moidoscope is indispensable in arriving at a correct diagnosis. The X-ray assists in the diagnosis by excluding other causes of diarrhœa, it also helps to determine the extent of the disease, it shows hypermotility of the colon with absence of normal haustrations, the typical pipe-stem or ribbon-like colon. (See Fig 1)

Finally, the treatment is not standardized, owing to the fact that we do not know the exact micro-organism with which we are contending, but in spite of this serious handicap the results from active and thorough treatment carried over a period of months in every case are on the whole quite satisfactory.

BACTERIOLOGY

In discussing the possible etiology of this disease, mention must first be made of Baigen's work which constitutes a noteworthy contribution to the study of this malady. Future advances in our knowledge of the disease will perhaps depend entirely upon bacteriological research. Baigen has described a non-mannite fermenting diplococcus which he considers to be the causative agent. He has been able to isolate this organism in about 75 per cent of his cases, and has noticed an improvement from vaccine therapy. At first this seemed most encouraging, but our experience during the past year has not been such as to make us feel that this was the solution of the problem. In one of my cases, I was able to obtain a fairly pure culture of this diplococcus from a superficial smear taken from the rectal ulcers and an organism morphologically similar from an abscessed tooth. This patient showed a marked improvement after extraction of the affected tooth and a repeated course of vaccine, but it is difficult to be sure which was chiefly responsible for this improvement. She has had very thorough treatment with the diplococcus vaccine, but has had relapses and is far from well. From clinical ob-

* Read before the Canadian Medical Association, Charlottetown, P E I, June 21, 1928

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An Address ON REFLECTIONS OF AN ANÆSTHETIST*

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Montreal*

MAY I be allowed first of all to express the very great pleasure which we members of the Canadian Society of Anæsthetists feel in having this opportunity to hold a joint meeting with the members of the Eastern Society. Nothing but good for ourselves and our specialty can come of such gatherings, and I earnestly hope that they will become a regular institution. No more appropriate place than this interesting old city could have been chosen for a meeting like this: firstly, because of its associations with the history of anæsthesia, and secondly because it was here that our forefathers and ours laid the best of all foundations of a lasting friendship by the time-honoured process of having a good stand-up fight.

I have chosen for the subject of my address some of the thoughts which have of late become more or less regular visitors to what I call my mind. There are other thoughts, illicit visitors, that come to me in moments of exasperation and depression. About these, from motives of prudence, I shall say nothing. If the day ever comes when I shall be able to retire, I should like to publish them in the form of a valedictory to the medical profession. That will be my swan song.

Now, in the first place, what do I really think about our specialty? If I had my life to live

over again would I be an anæsthetist? My answer is unhesitatingly "Yes." I know that there are certain disadvantages which are not found in other specialties, but in my opinion they are far outweighed by one great advantage. Because nearly all surgical operations are performed in the morning or early afternoon we have a certain amount of that inestimable boon, leisure. We can keep ourselves familiar with everything that is worth reading in our specialty, and yet have time at our disposal for something else than the business of earning our daily bread. It requires all my little stock of moral courage, in such a strenuous age, to speak of leisure in this way. I may confess here that I am in no way impressed by the strenuous man who works ten or twelve hours a day. I have come to believe that when a working day lasts longer than eight hours, the quality of the work for the whole day suffers. So I feel rather sorry for my strenuous friend. He may work early and late because he has erected the doctrine of "hustle" into a fetish, or he may be a successful doctor overdriven by his patients. Whatever the reason, he puts an excessive amount of time and energy into doing work which is not his best. Let him be careful not to take the cab-horse for his model lest, he also find himself with a drooping head and a range of vision limited to the road at his feet. In the course of time my strenuous friend will, no doubt, reap his reward and achieve the objects of his am-

* The Presidential Address before the Joint Session of the Eastern Society of Anæsthetists and the Canadian Society of Anæsthetists, Boston, October 8-12, 1928.

bitions, but it will be at the risk of finding that the fight has left him too battered in soul and body to enjoy them. To such as he the prophet spoke, and spoke in vain, when he said, "The wisdom of the scribe cometh by opportunity of leisure." I do not mean to imply that one necessarily becomes wise because one has leisure. Modern civilization provides only too many ways of passing time without benefit to our souls, our minds, or our bodies. Well for him who has a hobby, and best of all, one that entails some exercise of the mind, for intellectually it is impossible to stand still. We must go forward or backward.

Another advantage of our specialty is this, that when we leave our patients we leave our responsibility for them behind us. Not that our interest in them, either as patients or as human beings, need cease then. The time, short as it is, or should be, between the patient's arrival in the anæsthetic room and our putting him to sleep, is often an excellent introduction to an acquaintanceship which may ripen into friendship. He who has watched thousands of patients during this time cannot but have a feeling of admiration for the fortitude of human nature. What an ordeal it is for most of them, and how rarely does any one, grown up at least, show the white feather! In my own experience, the few who have refused to be operated upon, from fear, have been, almost without exception, men. There is, of course, the woman who turns her head away from the anæsthetic mask of face-piece, or puts up her hands to keep it off, but she only wishes to be coaxed. The quickest way to deal with her is to tell her that she is there of her own accord, that she is not obliged to have the operation if she does not want it. I have never known this expedient to fail.

Our admiration for human nature is somewhat qualified when we see women arrive in the anæsthetic room wearing wigs, or with their hair dyed, strange and pitiful evidence of vanity in those, who, in their efforts to deceive others, deceive only themselves. The rouging of lips and cheeks, however, is less easy to condone, for this, if artistically done, may add to our difficulties by disguising one of the most useful signs by which we estimate our patient's condition. With regard to children, I have come to believe that I can tell the character of a mother by the way her child behaves in the

anæsthetic room. When I am told that the patient is a "very nervous, high-strung child," I suspect that the mother is a fool. The child of a wise mother accepts the inevitable with the composure which comes of discipline.

I cannot help thinking sometimes that we might make the ordeal of an operation a little less trying to our patients than we do. The ideal arrangement for an operating-room suite would be to have a separate corridor leading to the anæsthetic room, so that the patient could not see his fellow sufferers on their way back to their rooms, bandaged, with air-ways in their mouths, perhaps retching, and perhaps with blood upon their faces. If they were prevented from getting a glimpse of nurses bustling about, or of a surgeon with a bloody gown washing his hands, they would be not a whit the worse. I would have the doors of the anæsthetic room sound-proof so that the noise of basins dropping on marble floors, or of the banging of lids of metal drums, would not reach the patient's ears just at the moment when the first few breaths of the anæsthetic have made his hearing painfully acute.

I am not, I know, suggesting anything new. I shall be told that these considerations have occurred to us all, and that the need for economy in space and money prevent such ideal arrangements. I reply that I am not convinced. Architects are still building fine new hospitals with anæsthetic rooms so small that they cannot be used. If it is possible to find money to waste in this way, surely it is possible to find a little more and invest it so as to bring a return in increased comfort for the patient. Curiously enough, anæsthetists are rarely, if ever, consulted in this matter. The surgeon is consulted, but he knows less than anyone else because he is there for only the briefest moments. When he is shown the plans of the new operating rooms for his hospital, and is told that they are based on those of St Basilisk's Hospital, where the famous Slasher clinic is, he is satisfied. He says he knows Freddy Slasher intimately, has been at his clinic, and has never heard him complain about his anæsthetic rooms. Thus mistakes are passed on from one modern hospital to another.

My ideal anæsthetic room would not look like a room in a hospital. There would be two or three pictures on the walls, and muslin curtains,

preferably not white ones, at the windows. A carpet, of course, there could not be. White enamelled furniture would be absent, and anæsthetic apparatus as inconspicuous as possible. I know that a little extra work would fall upon the ward maid or orderly, and that visiting doctors would look surprised, and even shocked, but I believe that these drawbacks would be compensated for by the improved morale of the patients. I know, too, that these aspirations of mine are vain. I realize that in this efficient age, we are, in these matters, bound hand and foot by convention. Hospital rooms must look like hospital rooms. There is no point in being efficient if you do not look efficient. And how repellently efficient the inside of a modern hospital looks to a patient!

There is another way in which we might make things easier for our patients. We might shorten the time during which they are under the influence of the anæsthetic. We are all agreed that there is much unnecessary loss of time between the commencement of the anæsthetic and of the operation. From the anæsthetist's point of view, surgeons may be divided into two classes. In the first are those who are afraid of the effects of the anæsthetic on their patients. This is a small class, made up chiefly of young, clever and ambitious surgeons who are not willing to lose a point, however small, in their patients' favour. In the second are those whose confidence in their anæsthetist is so unbounded that they think it does not matter how long the patient is kept under the influence of the anæsthetic. They are commonly seen washing up in a leisurely way after the patient has been ready in the operating room for some time. The members of this class are almost without exception, men who have "arrived."

Not is it only before the operation begins that time is wasted. The advantages of speed in operating have been rather overlooked. It is astonishing how well the body can stand the trauma of a surgical operation if it be inflicted quickly. Quickness in operating depends chiefly upon manual dexterity. The quick operator is, like the poet, "born, not made." He has been endowed at his birth with clever hands. The awkward man must educate his hands. He may become a good operator but he will never become a quick one. Two of the greatest surgeons

of the past, John Hunter and Lord Lister, belonged to this latter category. One of the rarest combinations is that of a first-class brain with first-class hands. There are many surgeons who have first-class hands, and excellent minds, who fall short of greatness because they have not sound judgment. Then lack of balance leads them into adopting fads, and if they have a gift for publicity and organization, and are not handicapped by too much modesty, they become famous. The first-class mind is, unfortunately, too often associated with second-class, or even third-class hands. There is another point to which I should like to draw your attention before I leave this subject. I think we shall find that clever hands are rarely well-shaped from an æsthetic point of view, and *vice versa*, that well-shaped hands are nearly always clumsy.

The rarity of great surgeons is no cause for wonder. It is a good deal to expect of a mere human being that he should have, not only the highest endowments of mind and hand, but the right sort of personality, and the sound physical health which is essential in the most exacting of professions. Not often in one frail body do you find

"The reason firm, the temperate will,
Endurance, foresight, strength and skill."

One of the signs which distinguish the great surgeon in the operating room from his colleagues of smaller calibre is this—he knows when he has done enough, and stops. He has either less faith in himself than they have, or more faith in nature. I sometimes wonder if surgery is not passing through a phase which is characterized by a lack of confidence in nature's power to heal. Is it necessary, for instance, to sew up the skin with such meticulous precision that there is not more than an eighth of an inch between each suture? Will not a cavity left in the mouth after an operation, heal properly unless packed with iodoform gauze? I have never experienced the taste and smell of iodoform and ether, combined with nausea and the discomfort which follows trauma in the mouth, all at the same time, but if I ever do, I think I shall spit out the iodoform gauze and take my chance with nature. I make no excuse for holding these and other unorthodox opinions, because I have learned by dipping into books on the history of medicine that the progress of surgery has been

largely a process of discarding wrong old practices in favour of wrong new ones

I have recently been reading the highly entertaining preface to Bernard Shaw's "Doctor's Dilemma," and learning what villains we doctors are. "The medical profession," he says, "has not a high character, it has an infamous character." And again, "It is simply unscientific to allege or believe that doctors do not, under existing circumstances, perform unnecessary operations." Now, it is of course true that there are rascals in our profession, as there are in all other walks of life, and that there is a certain number of operations done from a mixture of unworthy motives, chief among which are the need of money, and the wish for practice or advertisement. But in large hospitals there is a powerful deterrent about which Bernard Shaw was ignorant, and that is the watchful eyes which are focussed on the surgeon when he is in the operating room. If he makes a mistake it is known in a few minutes all over the hospital. If there is a suspicion that he has operated without good reason every one knows, and no one gives him the benefit of the doubt. The light which shines upon his reputation is fiercely bright. The best antiseptic of the operating room is the criticism of colleagues, the wholesome influence of which is reinforced by the fear of public opinion as crystallized in the minds of remote beings known as "gouvernors."

Bernard Shaw in the preface from which I have quoted asks the question "Are doctors scientific?" In unequivocal language he answers his own question in the negative. "As a matter of fact," he says, "the rank and file of doctors are no more scientific than their tailors." Whether we think Shaw right or wrong depends on what meaning we attach to the word "science." If we mean by "men of science" men who are intellectually honest, who want to find out the truth and to publish it stripped of all the obscurity which tradition, imagination, prejudice and self-interest throw over it, then I think we must be careful how we pride ourselves on being scientific. It is because we do not vitally care whether we have truth itself served up to us, or error dressed up to look more or less like truth, that medical literature in journals and books has attained its present monstrous proportions. In spite

of our training in science ours is the most credulous of professions.

A year or two ago I read in a leading French medical journal an address given by one of the most famous surgeons in Europe upon the subject of general anaesthesia by the spinal injection of stovaine. For twenty years he had used this method of anaesthesia to the exclusion of all others, in every kind of operation in general surgery "sans accident, sans mortalité." Now, having had a fairly wide experience of general and spinal anaesthesia, I confess I was a little incredulous. Could anyone I asked myself, carry on a large surgical practice for twenty years, and never have an "accident" or a death on the table? If he had had such a death or an accident could he be quite sure, in view of the fact that he was using the spinal injection of stovaine for general anaesthesia, that the anaesthetic played no part in it? It was a good deal to ask one to believe. But what sort of anaesthesia did he get? On this point I received enlightenment from a friend who had seen the great man operate upon a patient with cancer of the breast. "The patient," he said, "suffered a great deal of pain during the operation."

Here is another example of the truth which is not the whole truth. A distinguished surgeon and teacher of surgery some years ago operated within the space of a month or two upon four patients, who by reason of intemperate habits, obesity, and disease of the lungs were considered unsuitable for general anaesthesia. Three of them were given a spinal anaesthetic and made excellent recoveries. An attempt was made to give the fourth a spinal injection but resulted in failure owing to the impossibility of introducing the needle into the subdural space. He was then given ether and made as good a recovery as any of the other three. Now the surgeon reported the first three cases and said nothing about the fourth although his paper was written to show the place of spinal anaesthesia in certain operations where general anaesthesia is contraindicated.

Had Bernard Shaw thought of turning to medical writings for evidence to support his statement that we are no more scientific than our tailors I am afraid he would not have had to search far. He would have found it in the slipshod use of language which has unfortun-

ately become so common, and which can arise from no other cause than slovenly ways of thinking. As an example of what I mean I shall quote the following sentence which is taken from an article written by a member of the surgical staff of one of the great clinics of North America: "The consideration of operation in the presence of the degenerative cardiac diseases must be individualized and based entirely on the prognosis of the particular type of disease as ascertained by clinical and electrocardiographic studies, considered in conjunction with the urgency of the operation and the effect on the cardio-vascular system of removal of the surgical burden." Now, what I ask is all this about? The use of the word "individualized" I find especially confusing. I looked up the word in the dictionary, and found that it means, "to give individual character to, to specify," and I wondered how one can individualize a consideration.

Another example comes, I regret to say, from a paper written by an anæsthetist. "Respiration during induction," he writes, "may terminate in apnoea even though they (the patients) are still too light to initiate surgical procedure." Passing over the colloquial sense in which the word "light" is used, we have here a statement from which we are justified in inferring that when the patients are more deeply under the influence of ether they will begin to operate upon themselves.

I have never heard any plausible explanation of the confusion of tongues which put a stop to the building of the Tower of Babel. My own theory is that everyone employed upon that work adopted the position of Humpty Dumpty in "Through the Looking-Glass." "When I use a word," said that bold philologist, "it means just what I choose it to mean, neither more nor less."

In this same spirit we have dealt with the

word "pathology." Originally it meant, if we may judge by its derivation, "a discourse on disease." It is now also a synonym for "disease." A patient with bronchitis has "lung pathology." To realize fully how confusing is this sort of innovation we have only to subject other words ending in "ology" to the same treatment. Theology becomes a synonym for God, and the Revised Prayer Book of the future will contain a creed commencing with "I believe in theology." An atheist will be one who "does not believe in theology." "Phienology" will come to mean "mind," and a madman will be one who has "gone out of his phienology." If by the time he recovers, the word "physiology" has acquired the meaning of "health," he will be said to have recovered his "phienological physiology." Shall we be justified in feeling sorry for him if he relapses?

It is no excuse for writing carelessly to plead that one has not time to do better. Readers do not hear the excuse. What is badly expressed they find difficult to understand, and will not bother to read. "If your language is jargon," says a great modern teacher, "your intellect, if not your whole character, will almost certainly correspond. Where your mind should go straight, it will dodge, the difficulties it should approach with a fair front, and grip with a firm hand, it will be seeking to evade or circumvent. For the Style is the Man, and where a man's treasure is, there his heart, and his brain, and his writing, will be also."

There are several other subjects about which I should like to speak, but I refrain out of consideration for the feelings of the gentlemen who have arranged the program of this meeting. I know that to them long-windedness is the unpardonable sin. I hope I have not offended too deeply.

A Medical Family—In August, 1828, Matthew Bailie Gairdner became a licentiate of the Royal College of Surgeons of Edinburgh, at the early age of 19, he graduated M.D. at the University of Edinburgh two years later, and became F.R.C.S. Ed. in 1858, he died in 1888. His eldest son, James, graduated M.B., C.M. Ed. in 1867, proceeded M.D. in 1873, and has acted as medical officer of Crief Parish in Perthshire for more than sixty years. The professional practice of father and son has thus

covered more than a century. It would be interesting to know if this record can be approached by any other medical family. Dr. James Gairdner's younger brother, Matthew William Gairdner, graduated M.B. Ed. and obtained the diploma of L.R.C.S. Ed. in 1871, he resides at Cheltenham, and his son, Alan Campbell Gairdner, is a medical graduate of Oxford and obtained the F.R.C.S. Eng. this summer.—*Brit. M. J.*, 1928, ii, 583.

An Address ON THE FIELD OF NEUROSURGERY*

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THE differences between the American and Canadian medical profession have little to do with science and much with tradition and background. For me, to leave the one and enter the other is made easier by years of medical study in Great Britain, and because of the fact that I can claim as my teacher and friend, a great Canadian, Sir William Osler.

Such a change is apt to cause one to look questioningly at the divisions between the ever more specialized branches of our profession. New knowledge, and a multitude of new technical procedures, have made it impossible for any man to master all of the intricacies of medical science, even though he were endowed with the many-sided capacity of Leonardo Da Vinci, or John Hunter. But a fair and efficient adjustment even between medicine and surgery, has long offered difficulty. It is my desire to speak briefly of this relationship, at least in so far as it concerns the treatment of diseases of the nervous system.

Neurosurgery is perhaps the youngest of medical specialties. Operations upon the central nervous system were naturally doomed to failure until Lister had given us the secret of the control of sepsis, and Ferrier had provided the clue to localization of function in the brain, for sepsis within the meninges spells death and blind exploration may mean paralysis.

Neurologists who early saw the goal to be attained called upon surgeons who did not understand the goal and who were ignorant of the physiology of the nervous system. The results were terrible and the profession gradually concluded that the unfortunate patients might as well be allowed to die in their own way. This attitude, which can be dispelled only by demonstrated results, lingers still in many localities.

Effective neurosurgery may be said to begin

with Sir Victor Horsley. He started his professional career as a surgeon but before he began his work upon the human nervous system he had made of himself a neurophysiologist, and years of experimental surgery had enabled him to develop a technique for such operations. With his use of bone wax, heat, and bits of muscle for hæmostasis, and his daring approach to all regions of the brain and spinal cord Horsley was a pioneer, and must always be considered the great figure in neurosurgery. MacEwen of Glasgow, at about the same time demonstrated the proper treatment of abscesses of the brain, and left behind him an almost unbelievably low mortality record in the treatment of this affliction.

Following Horsley, Cushing has refined the methods of neurosurgery and has demonstrated once and for all that these operations may be done with a low mortality by a specialized team. In his clinic it was first proved that simple craniotomy could be done with little more risk than that involved in eelotomy. Dr. Cushing's statistics have turned a new page in the surgery of tumours of the brain and hypophysis and there are a score of his pupils scattered through America and Europe, restricting their work to this type of surgery and reproducing his results according to their several ability.

In Philadelphia the fortunately combined efforts of a neurologist, Dr. Spiller, and a neurosurgeon, Dr. Frazier, have provided us with a permanent cure for trigeminal neuralgia by differential section of the posterior root, a procedure which, in experienced hands, has practically no operative mortality. They have also given us another means of liberating patients from unbearable pain, *i.e.* chordotomy, or section of the tracts which conduct pain in the spinal cord.

Dandy has provided us with a new method of cerebral localization, *i.e.*, roentgenography of the cranial cavity after direct ventricular re-

* Delivered before the Montreal Medico Chirurgical Society, November 2, 1928

placement of fluid by air or after similar spinal replacement. Thanks to this method, which should, however, be used only in doubtful cases, the diagnosis of unlocalized brain tumour is now practically never justified.

Such injections of air into the spinal canal may also be used as a specific cure for traumatic meningeal headache. There are many more advances in the field of the central nervous system and also the peripheral and sympathetic nervous system which may not be mentioned here.

Thanks to peculiar conditions in American professional and university life it has been possible for an ever increasing group of men to confine their activity to neurosurgery. The result has been a rapid expansion of this specialty. In one western city of the United States there are at present seven neurosurgeons, only one of whom is dependent upon a university budget for his income.

On the continent of Europe on the other hand, there has been no such specialization. Every general surgeon has held himself ready to do any operation upon the nervous system which may, by chance, be entrusted to him. The result has been little or no advance in surgical therapy. At the same time neurology on the continent seems to have failed to fulfill the brilliant promise of such clinicians as Marie, Déjerine and Oppenheim. The university chairs created for combined neurology and psychiatry have come gradually to be occupied by men whose interest is largely psychiatry.

In two neurological clinics, however, which are perhaps the most distinguished on the continent to-day, a new stand has been taken. Foerster, Professor of Neurology in Breslau, now carries out all of his own operations, and has become the leading and almost the only neurosurgeon in Germany. Brouwer, of Amsterdam, has induced his native city to send one of his assistants abroad for training in neurosurgery that he may return and operate within the university neurological clinic.

The future of neurology and the future of neurosurgery alike demand that these two specialties be combined in one. Herein lies salvation and guidance for both. A surgeon who operates upon the nervous system without

studying both the subject of neurology in general, and the neurological problems of his patient in particular, works under too great a handicap, regardless of his manual dexterity. The prerequisite training is similar for neurology and neurosurgery, and neither can do without the other. It is true that not every neurologist is in a position to operate, and likewise the surgeon who may spend two to five hours upon his feet in each major operation finds it quite impossible to treat non-operative neurological cases. There must be a professional subdivision of the material treated.

The neuropathological, neurophysiological, and clinical interests of medicine and surgery must be identical. The common meeting ground is above all the neuropathological laboratory. Comparative segregation of neurology and neurosurgery with their own methods of research and study is the *sine qua non* of future advance.

On the other hand, it is true that too great specialization is dangerous, and neurology and neurosurgery need the steadying influence of an association with general medicine and surgery, which should be as intimate as hospital life will permit. Aside from the clinic, the closest contact which this double specialty makes with surgery is through the operating room, with medicine through the research laboratory.

The field of neurosurgery, both now and in the future, should not be confined to tumours of the nervous system and the douloureux, as is the case in some clinics. On the contrary, it should include the prevention and the cure of traumatic epilepsy, control of cardiovascular pain and of intractable pain of all types, traumatic headaches and some types of migraine, birth hæmorrhage and the ensuing epilepsy, peripheral nerve injuries, and even some cases of pyogenic meningitis and hydrocephalus. These and other involvements of the nervous system open up a wide and much neglected field of activity.

The future promises much. New methods will surely solve many of the unsolved problems. In no other department of medicine is the need for new work more challenging, and in my opinion nowhere else is the discovery of scientific gold so certain.

ULCERATIVE COLITIS*

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THE subject of ulcerative colitis has received a great deal of attention in the medical literature of all countries during the past decade. In reviewing the English, German, French and American literature on this disease, one is struck by the similarity of the articles. It seems obvious that these writers from various countries are all dealing with the same condition and not, as has been suggested, with different diseases brought under the same name—ulcerative colitis. The term is undoubtedly unsatisfactory from the etiological standpoint, but the condition has been so adequately described, both in regard to its pathology and clinical manifestations, that no confusion should exist regarding the condition it is intended to designate.

One can summarize the present state of our knowledge of the disease in this way. Ulcerative colitis is a disease which is essentially chronic, but is subject to acute or sub-acute exacerbations. The exact etiological factor is unknown though it is almost universally agreed that it is an infectious disease of which the specific micro-organism has not been definitely isolated. The pathological lesion is typical and constant, being an erosion involving only the superficial layers of the mucosa in the earlier stages, but associated with oedema, congestion, and leucocytic infiltration of the entire bowel wall in the more advanced cases. While the whole length of the large bowel is frequently involved, the brunt of the disease is carried by the rectum and sigmoid. The clinical manifestations are diarrhoea with from six to thirty stools a day, which contain blood, pus, and mucus. A varying degree of secondary anaemia is always present. Loss of weight, in spite of a fairly good appetite, a slight temperature, leucocytosis, and cramp-like abdominal pain relieved by evacuations, are symptoms of minor diagnostic value. The sig-

midoscope is indispensable in arriving at a correct diagnosis. The X-ray assists in the diagnosis by excluding other causes of diarrhoea, it also helps to determine the extent of the disease. It shows hypermotility of the colon with absence of normal haustrations, the typical pipe-stem or ribbon-like colon. (See Fig. 1)

Finally, the treatment is not standardized, owing to the fact that we do not know the exact micro-organism with which we are contending, but in spite of this serious handicap the results from active and thorough treatment carried over a period of months in every case are on the whole quite satisfactory.

BACTERIOLOGY

In discussing the possible etiology of this disease, mention must first be made of Baigen's work which constitutes a noteworthy contribution to the study of this malady. Future advances in our knowledge of the disease will perhaps depend entirely upon bacteriological research. Baigen has described a non-mannite fermenting diplococcus which he considers to be the causative agent. He has been able to isolate this organism in about 75 per cent of his cases, and has noticed an improvement from vaccine therapy. At first this seemed most encouraging, but our experience during the past year has not been such as to make us feel that this was the solution of the problem. In one of my cases, I was able to obtain a fairly pure culture of this diplococcus from a superficial smear taken from the rectal ulcers and an organism morphologically similar from an abscessed tooth. This patient showed a marked improvement after extraction of the affected tooth and a repeated course of vaccine, but it is difficult to be sure which was chiefly responsible for this improvement. She has had very thorough treatment with the diplococcus vaccine, but has had relapses and is far from well. From clinical ob-

* Read before the Canadian Medical Association, Charlottetown, P.E.I., June 21, 1928.

servation and the result of bacteriological work, I have come to believe that this diplococcus is not specific for the disease, but is only one of the predominating secondary infective organisms. The bacteriological studies carried out by Paulson at the Johns Hopkins Hospital support this view.



FIG 1—Ulcerative colitis—typical pipestem colon

I have been making careful bacteriological studies of our cases for more than two years, but it occurred to me only about six months ago that there was an obvious explanation for the different results obtained from other places. Bergen and others have used sterile cotton swabs to obtain their specimens, whereas I have been using a sharp cutting curette with a very small spoon and a long handle. In this way I obtain a small section of the base of the ulcer and not merely a surface smear. Text-books on tropical medicine tell us that the dysentery bacilli will often disappear from the stool within ten days after the onset of the disease, but that the organism can be obtained later from sections of the bowel wall. It has occurred to me that this is the reason why Dr F. Cadham has been able to isolate the dysentery bacillus from our scrapings. He has reported *Bacillus dysenteriae* present in four of the last five cases in-

vestigated. Three cases belonged to the Flexner group, whereas the fourth was of the Shiga type.

One of my cases who had the diplococcus vaccine at different intervals for more than a year, without improvement, was later treated by caecostomy with routine irrigations and by serum therapy. The serum was prepared by Dr F. Cadham of the Manitoba University and produced the most gratifying results. From being markedly anæmic the patient's blood count has become normal, and his bowel movements have been reduced from twelve to sixteen to one or two evacuations a day.

PREDISPOSING FACTORS

Very little importance can be placed on so-called predisposing factors. It must be admitted that many persons are exposed to this infection who do not develop ulcerative colitis. Others again contract the disease and make a complete recovery without special treatment. When we speak about a patient's constitutional predisposition or his resistance to infection these are only phrases the exact meaning of which is not known.

DIAGNOSIS

Other causes of diarrhoeas, such as tuberculosis, malignancy, systemic manifestations of chemical poisons, and achilia gastrica need only be mentioned. Some of our cases had been treated as tuberculous colitis for varying periods before coming under our observation. The differentiation is extremely easy. Blood is never a feature in tuberculosis of the bowel, and when it does occur is usually due to an associated lesion, such as hæmorrhoids or polypi, in ulcerative colitis hæmorrhagic stools are a constant feature. Then, again, sigmoidoscopic examination of the rectum and sigmoid is usually quite negative in tuberculous disease, whereas in ulcerative colitis the typical lesion as described can nearly always be seen. There are some cases where the disease is confined to the transverse or descending colon and sigmoidoscopic examination has been negative, but even in these cases the rectum becomes involved in time. (See Fig 2). A negative sigmoidoscopic examination, therefore, does not invariably exclude ulcerative colitis. In these cases the x-ray becomes essential for diagnosis. A barium series and a barium enema



FIG 2—Illustrating a localized area of ulceration in the transverse colon which later became generalized

should always be done to determine the extent of the ulcerative process, and also to determine the presence or absence of simple strictures or filling defects which might indicate malignant disease. A gastric analysis should always be made as the cases with achlorhydria are often helped by the administration of hydrochloric acid.

During the period of natural remissions which occur in some cases, investigation of the stool will continue to show the presence of blood and pus, and sigmoidoscopic examination will reveal unhealthy mucosa which is oedematous and studded here and there with minute ulcers (latent colitis).

COMPLICATIONS

The complications seen are (1) arthritis, (2) hæmorrhage, (3) perianal abscess, (4) stricture, (5) polyposis, (6) perforation, (7) malignancy (See Fig 3).

TREATMENT

Contrary to the experience of many writers on the subject, we have found a simple cæcostomy for purposes of irrigation of inestimable value. A soft catheter is purse-stringed into the

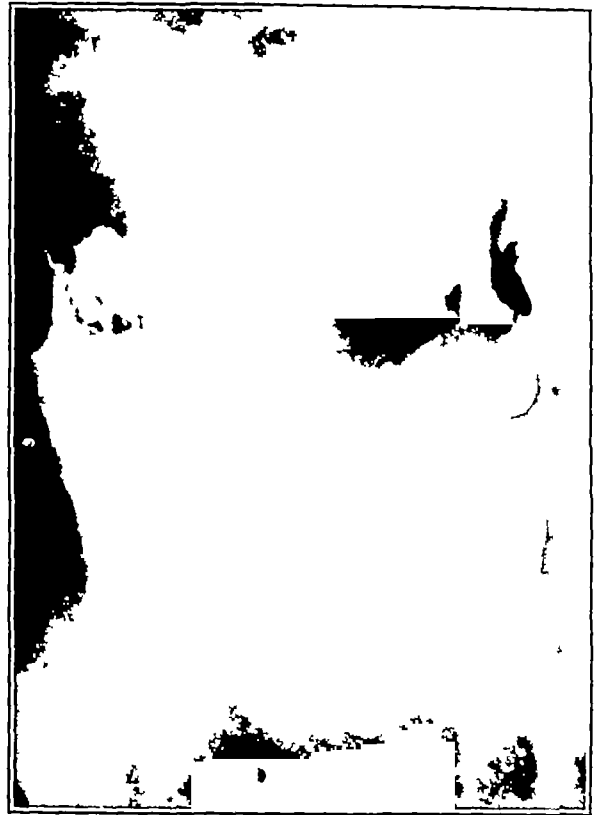


FIG 3—Ulcerative colitis of seventeen years standing complicated by malignancy of the transverse colon

cæcum. This can usually be done under local anaesthesia and carries with it practically no risk. The appendix is usually removed at the same time. We have instituted continuous irrigation in some of our severe cases, thereby giving instant relief to the patient from the distressing tenesmus and frequent evacuations. An ordinary irrigating-can with Murphy's drip attachment, is connected to the cæcostomy tube and warm normal saline allowed to enter by a rapid-drip method. At the same time a small rectal tube is inserted and connected to a large vessel under the bed. By this means the cæcum and ascending colon are intermittently filled up with warm solution which is then flushed through the remainder of the large gut.

Normal saline solution is the best suited for this type of irrigation. Tannin, silver nitrate, and such-like irritants should probably never be used. By means of the irrigation a cleansing of the ulcerated surface is accomplished and prevents to a large degree the absorption of septic products.

A transverse ileostomy (Brown's operation) is rarely necessary, but finds its usefulness in selected cases. Indications for this procedure are (1) repeated profuse colonic hæmorrhages,

(2) generalized polyposis, and (3) in long standing cases where the colon has been converted into a useless, fibrous tube. It is not indicated in the acute early cases, as these can be controlled, with few exceptions, by hot irrigations through a small caecostomy tube. In one of my cases, with profuse repeated hæmorrhages requiring transfusion, I did a transverse ileostomy under local anaesthesia, employing the principle advocated by Mikulicz in his operation on the sigmoid for carcinoma. The ileum was double-barrelled about twelve to sixteen inches from the caecum along the antimesenteric surface for about three inches. This portion was returned to the abdomen and a rubber tube placed under the loop. Nine months later, when it was desired to re-establish the continuity of the intestinal tract, a crushing forceps was applied to this spur and within five days the patient was having normal bowel evacuations. The advantages of this extra-peritoneal anastomosis is obvious in a debilitated patient. Dr N J Maclean has used this technique with gratifying results in cases of tumour of the small bowel and gangrene of the ileum with obstruction, when immediate anastomosis would undoubtedly have proved fatal.

The dietetic and medical management is important both during and following active treatment. A low-residue diet of high caloric value is indicated. Cod liver oil and calcium lactate by the mouth may be added. Stovarsol occasionally produces a spectacular improvement, but in these cases I suspect an associated amœbic infection. The drug must be used very cautiously, as some patients have an idiosyncrasy to it.

Finally, it should be recorded that we are using at present an autogenous serum prepared by Dr F Cadham. The serum is obtained by injecting into animals the Flexner bacillus

isolated from recent cases. Nothing conclusive can be stated at this time, but it is likely to prove a distinct advance over other methods of treatment. This work requires experimental confirmation.

Personally, I feel that the final solution of primary ulcerative colitis will not be medical, surgical, nor vaccine therapy, but that serum therapy will eventually cure the disease.

SUMMARY

- 1 A new method of obtaining specimens for bacteriological studies is presented.
- 2 The advantages of a modification of the usual transverse ileostomy are mentioned.
- 3 A new advance in treatment by serological methods is indicated (autogenous serum).
- 4 Ulcerative colitis, according to our observations, is due to infection with *Bacillus dysenteriae*, and should be regarded as a form of bacillary dysentery.

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The July issue of the *Kenya and East African Medical Journal* contains a report of an investigation into animal nutrition in Kenya, the supervision of which was undertaken by Dr J B Orr, director of the Rowett Research Institute, Aberdeen. One conclusion reached was that, in areas where the pasture is deficient in minerals, an increased rate of growth in lambs and

calves, and a better yield of milk in cows, can be obtained by feeding with appropriate mineral mixtures. The issue also contains an article on the control of bilharzia disease, by Dr F G Cawston, and an account by Dr A R Paterson of the organization of anti malarial work in the Federated Malay States.

DEPILATION WITH THALLIUM ACETATE IN THE TREATMENT OF RINGWORM OF THE SCALP IN CHILDREN*

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UNTIL thirty years ago the treatment of tinea capitis, or tinea tonsurans, was most unsatisfactory. Local applications of tincture of iodine, croton oil, and ointments containing ammoniated mercury, oleate of copper, sulphur, resorcin, salicylic acid, etc., were the usual remedies. Such treatment was tedious and usually lasted many months. The great difficulty in local therapy was the mechanical impossibility of reaching the fungi in the hair follicles. About the middle of the last century, institutions called "ringworm schools" were established in London and Paris. The average residence of patients was eighteen months for the common small-spored fungus cases, but some of the large-spored infections took three years to clear up. The economic importance of the disease is thus easily seen.

A tremendous advance in therapy took place when x-rays were found to cause depilation. Freund was the first to suggest their use. About the same time Sabouraud, of the Hôpital St. Louis in Paris, first used them in the treatment of ringworm of the scalp. MacKee¹ tells us that in 1904 Sabouraud and Nolle devised a method of depilating the scalp at one sitting. Since that time this treatment has come into general use. The x-rays cause depilation by some imperfectly understood action on the hair follicles. They have no direct effect on the fungus. When the hair falls the organisms are removed with it from the follicles. Any that remain may be reached by mild fungicidal applications.

Felden² tells us that in 1897 Sabouraud observed a patient who had lost almost all her hair after taking some pills prescribed for dysentery. He found on investigation that a number of these pills contained thallium acetate.

After a few weeks the hair was restored completely. This suggested the use of the drug therapeutically but, after seeing some toxic symptoms, he gave it up and later returned to depilation with x-rays. Buschke, of Berlin, should be credited with really demonstrating the practical usefulness and clinical value of thallium acetate therapy in tinea capitis.

The therapeutic value of the treatment has been thoroughly tested in recent years. Drummond³ states that Cicero and Peter, of Mexico City, have used the method in more than 500 cases with good results. About 1,000 cases were reported in 1926. Very little of this work was done in England until last year when Dowling,⁴ Frith,⁵ Dixon,⁶ Curtis,⁷ and others reported a series of cases.

During the past nine months 21 cases, 17 of tinea microsporum and four of favus capitis have



FIG. 1—A case of tinea capitis before treatment.

* Read at a meeting of the Winnipeg Medical Society, Winnipeg, Man., Sept. 20, 1928.

been treated in St Boniface Hospital Skin Clinic by thallium acetate. Three of the favus patients had been treated with rays unsuccessfully before coming to St Boniface. Two of the twenty-one children are still under treatment.

The technique has been as follows. After a general examination in the paediatric clinic, the child is carefully weighed without any clothes. Thallium acetate is accurately prescribed in a dosage of grs $\frac{1}{8}$ (8 mg) per $2\frac{1}{4}$ lbs (1 kilo) body weight. The drug is administered in a single dose in half a glass of sweetened water first thing in the morning and no food is given until noon. From the first day a fungicidal ointment, ammoniated mercury (2 per cent), or sulphur (5 per cent), is applied night and morning to the scalp. There is also a daily shampoo with liquid green soap. About the twelfth or fourteenth day, the hair begins to loosen and adhesive tape is used to assist in depilation, which is usually completed about the twenty-first day.

falls. This is essential as a protection to the new hairs against infection.

There has been a good deal in the literature about the toxic effects of this drug. The commonest symptoms reported are joint and muscle pains, nearly always in the lower limbs. These



FIG 4—A case of favus before treatment.



FIG 2—Complete depilation after the use of thallium.



FIG 5—Complete depilation after the use of thallium.



FIG 3—Growth of hair two months later.

Re-growth after thallium depilation begins very early. We have observed it after one week in some of our cases. Because of this it is most important that the shampooing and daily application of a mild antiseptic ointment should be kept up for at least one month after the hair



FIG 6—The same case three months later

pains generally begin about a week or ten days after the taking of the drug. Loss of appetite, drowsiness, and irritability have been noted. In our series we have had three children with toxic symptoms. One boy almost thirteen years of age was confined to bed for two weeks because of pain, swelling and restriction of movement in both knees and both ankle joints. He cleared up with rest and the administration of salicylates. One girl of ten had loss of appetite, with pain and swelling in the right knee. One week's rest in bed restored her to normal. Another boy, eight years old, complained of pain in both legs, but after three days in bed he recovered completely. We had one complete failure in a boy of ten with stout, coarse hair, one partial failure in a seven-year old girl, and another partial failure in a six-year old boy.

Pusey⁸ informs us that Buschke summarizes the advantages of thallium acetate therapy as follows —

(1) The treatment is extremely simple and

costs almost nothing (2) It can be used for children under three years of age (3) It can be used in country districts where x-rays are not available (4) It can be used for cases where x-rays have proved unsuccessful (5) It may be used for cases of inflamed ringworm (kerion) (6) There is no danger whatever of permanent alopecia

The disadvantages are (1) Its toxic effects (2) It is not so certain to cure as a good x-ray depilation, though this difficulty may, he thinks, be overcome by very careful local treatment

CONCLUSION

1 In our opinion the method of prescribing the drug is important. Two of our failures were due to under-dosage. Once the drug was dispensed in an ordinary powder paper and as it was a sultry day the paper absorbed part of the drug, another time a gelatine capsule was used and as this was dispensed on a very hot day the capsule appeared to melt and some of the drug escaped and was absorbed by the wrapper. Thallium acetate is very soluble in water and in humid atmospheres tends to deliquesce. Our experience has taught us to use a glass vial as a container.

2 Our limited experience has shown the value of this form of therapy, in feeble minded children, in kerion (inflamed ringworm), and particularly in favus capitis. The latter responded to treatment very satisfactorily.

3 We believe that treatment by thallium acetate marks a real advance and will be welcomed particularly by the rural practitioners in this country. It must be borne in mind that toxic symptoms are likely to occur in children approaching puberty.

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PHARMACOLOGICAL AND TOXICOLOGICAL ASPECTS OF THALLIUM

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ALTHOUGH thallium was detected spectroscopically by Sn Wm Crookes in 1861, and investigated chemically by Lamy in 1863, it was not introduced into therapeutics until about thirty-five years later. Its first employment was to check the night-sweats of tuberculosis. 5-10 mgm per day of the acetate was a common dose. The anhydrotic action continued only while the drug was being taken. After the drug was discontinued a curious patchy baldness occasionally ensued. Sabouraud (1897) and Richet (1899)¹ demonstrated this as a specific thallium effect, and the former used the drug in the form of a 10 per cent salve as a depilatory in the treatment of scalp ringworm. Depilation followed some weeks after the salve was first applied, apparently indicating an action only after absorption rather than a local effect. Toxic symptoms, such as enteritis, albuminuria, and œdema, occurred so frequently that he discontinued the use of the drug.²

In 1900, Buschke in Germany commenced an experimental study of the drug, and most of the literature to-day is the result of his prolific pen. He has experimented with animals from the tadpole to the ape, and many interesting results are reported. Tadpoles immersed in dilute thallium solutions fail to grow or continue development.³ Rats fed on thallium develop bone changes histologically identical with rickets or osteomalacia.⁴ Old rats lost the sexual instinct, young rats suffered atrophy of the testicles, very young rats developed cataract.² The adrenal bodies, post-mortem, showed vacuolation and deficiency of epinephrin content.² All these effects Buschke attributed to a severe endocrine disturbance. The falling of hair was, of course, a conspicuous effect in all his experiments. A curious fact was that the long sensory hairs on the rat's nose were not affected by thallium. In work on human beings, it was found that nostril-hairs, eyelashes, inner parts of the eyebrows, and, where present, hairs in moles, also remained

fast while all other hair fell out.³ Buschke therefore assumed that, since the sympathetic nervous system is closely associated with the endocrines, there was a sympathetic effect here, and that all hair which fell out was innervated by the sympathetic system, all that remained firm was otherwise innervated. This, of course, is pure theory, since no microscopic work has been done to support it. Thallium's action in suppressing the secretion of sweat suggested that it might be antagonistic to pilocarpine. Experiments showed that pilocarpine's action is not affected by thallium, and Buschke states that such action as thallium has is exerted centrally and not peripherally on the nervous system.⁵

At a meeting of the Royal Society of Medicine in 1927, Dixon⁶ reported his observations on the action of the drug. His researches indicate an effect on the nerve ganglion or synapse, in that impulses pass through much more easily, especially in the sympathetic system, after the use of thallium. The immediate effect of the injection is a relaxation of all smooth muscle, suggesting a possible augmented sympathetic action. Depilation occurs after two weeks. A curious exhibit was a picture of a rat with a small shaved area on the back, fed on thallium, and finally presenting the picture of complete baldness with the exception of the shaved area, in which a luxuriant growth of hair had occurred. In many investigators' reports is noted the richness of re-growth of hair after thallium. Histological examination of skin and hair in the areas of alopecia has shown no considerable or permanent change in the hair follicle, except in the case of prolonged thallium feeding, when atrophy does occur.

While there are records of hundreds of successful treatments, there are a few reports of thallium poisoning available also. Swann and Bateman (1910),⁷ injected several animals with thallium salts. The main facts brought out by them are (1) in large doses thallium acts much

like lead or arsenic, (2) the action of thallium is cumulative, (3) early involvements of the central nervous system (apathy, tremor, paralyses) and of the kidney (albuminuria, diuresis) are characteristic. Pauchly, (1926)² reports three cases with a mildly toxic reaction in a series of fourteen cases treated; all three showed transient albuminuria and glycosuria. Davies and Andrews, (1927)³ report a case where two sisters, aged eight and eleven, received doses of 85 mgm per kg, of thallium acetate. The younger felt no ill effects whatever and depilation was satisfactory. The older sister reported in two weeks, just after the hair commenced falling, with marked and painful oedema of the legs, swelling of the knees, and pain in both knee-joints. Symptomatic treatment was given. Two days later the child's parents reported that she had had a fit epileptiform by the description and had then been semi-conscious for two hours. Frequency of urination followed (every half-hour for several hours). The only pathological substance in the urine was acetone which persisted for several days in spite of a high carbohydrate diet. Five weeks after taking the drug the child was discharged from hospital emaciated with some tenderness of legs, but able to walk, and suffering from occasional attacks of lethargy and oedema of the face lasting fifteen minutes. In commenting, the authors speak of arthritis and peri-arthritis of the knee-joint "with which we are familiar as occurring *nearly invariably* to a lesser degree." Other therapists noted severe nerve and muscle pains as being frequently associated with thallium treatment.

Two suicidal (unsuccessful) cases reported in Germany^{9, 10} (doses of about 10 mgm per kg in adults) indicate toxic action as mainly (1) violent gastro-intestinal upset (anorexia, vomiting, diarrhoea constipation acholuria, colic), (2) peripheral polyneuritis, (3) transient kidney disturbances, (4) cessation of menses (5) early lymphocytosis followed by eosinophilia (endocrine disturbances are frequently associated with eosinophilia). Four weeks after taking the drug, thallium was still demonstrable in the blood and urine, and blood-calcium and potassium values were then normal. No previous determinations had been made.

A homicidal (successful) case is also reported¹¹. A brand of rat-poison containing about 3

per cent of thallium salts was the agent employed by the wife against her spouse. After a six-weeks' stay in hospital, with much the same symptoms as above, the man was well enough to go home, but a second poisoning led to his death in three weeks. An incomplete report¹² of pericution of a frog-heart with a solution containing thallium states that after a few beats the heart stopped in diastole. The addition of calcium salts to the fluid resulted in a prompt resumption of the beat.

Efforts to avoid toxic symptoms by a combined therapy of a half-dose of thallium and a half-dose of X-ray have received favourable mention by some but results are not so uniformly successful as with thallium alone. The combination of thallium and X-ray or radium therapy has been successful in treating two cases of epithelioma which were resistant to radiation alone.⁹ Apparently there is some common basis of explanation of thallium and X-ray action in this matter but as yet it remains a mystery.

Post-mortem analyses of body-structures show that the muscles act as the main storehouse for thallium.⁹ The analysis of skin and hair fails to show thallium in these structures so that local action does not appear to be the clue. Excretion is mainly by the kidney, but thallium may be detected in all the body secretions after feeding the drug. It is readily excreted in milk and experimental evidence is present to show that the fetus is poisoned by feeding thallium to the mother.¹² Buschke believes this may be an indirect effect, through malfunction of the endocrine glands.

SUMMARY

From this array of clinical and experimental evidence a few points may be extracted.

1 Young children up to seven or eight years of age withstand thallium well, older children and adults are more likely to show toxic symptoms.

2 Evidence is offered of various endocrine disturbances during the use of thallium. Whether these are directly due to the drug cannot be stated definitely.

3 Evidence of disturbed metabolism especially calcium deficiency, is presented. The muscle cramps could be correctly explained by a removal or antagonism of calcium by thallium. Oedema, diuresis, etc., may be due to increased

capillary permeability, which occurs in calcium deficiency. Disturbances of the central nervous system, such as fits or tremors or apathy, occur where calcium metabolism is upset, as in injury to the parathyroids. Osteomalacia and rickets are definitely due to calcium deficiency. Whether such calcium disturbance is caused directly, or is secondary to parathyroid damage, is a matter for further investigation.

4 Nerve damage does not appear to be permanent. Kidney damage also appears to be transient, if the kidney is damaged at all.

5 No permanent damage to the hair-follicle results from therapeutic doses of thallium salts.

6 Since the action of thallium is cumulative, it seems that some toxic effects must be endured for the sake of the therapeutic benefits, and drugs to increase elimination, such as sodium thiosulphate, are contraindicated.

7 No observers, clinical or experimental, have followed cases for a sufficiently long period to

say definitely whether or not permanent damage may follow such chemical or endocrine upsets, particularly in view of the fact that most of the patients are growing children.

Some research into thallium has already been done by our department, and further work is being carried on now, in order to clarify some of the problems set forth in this paper.

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NEPHROSIS IN CHILDREN*†

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III. COURSE, PROGNOSIS AND TREATMENT

THE insidiousness of the onset of nephrosis is one of its characteristic features in most of the cases. Weeks, or even months, of vague ill-health, pallor and lassitude are succeeded by a gain in weight, which at first is regarded as improvement. Such increases in weight may come and go several times before their true nature becomes manifest and œdema is demonstrable. Subsequently, the hydropic state develops rapidly and in a few days general œdema and anasarca may be present to an extreme degree. More rarely, the development of the dropsical state follows an acute upper respiratory infection in a previously healthy child. Less frequent still are those cases in which uræmic

symptoms due to cerebral œdema usher in the disease. Such cases do not always present any marked degree of general œdema, this may be limited to that of the cerebrum and the external genitals.

The mode of onset exerts considerable influence on the subsequent course of the illness. Those cases in which the onset is sudden, particularly those with cerebral œdema, usually run a more or less acute course for some weeks, and then all signs and symptoms of the disease disappear. In cases in which the disease is more gradual in its development, recovery is likewise slow, if indeed it occurs at all. In those in which the disease becomes chronic, months of invalidism, during which gross œdema recurs again and again, or persists over long periods, may be ultimately followed by cure or terminated by an intercurrent infection. More rarely, as pointed out in a previous paper,¹ chronicity may produce secondary changes in the kidney which

* From the Laboratories of the Sub Department of Pediatrics, University of Toronto, and from the wards and laboratories of the Hospital for Sick Children, Toronto, under the direction of Alan Brown, M.B.

† Part I, Nature, Etiology and Pathology, *Canad M Ass J*, 1928 **ix**, 46. Part II, Laboratory Findings, *Ibid.*, 555.

result in the development of the clinical and pathological picture of chronic interstitial nephritis. Such a change may occur independent of, or subsequent to, an acute nephritis superimposed on the nephrotic kidney.

No urinary symptoms are complained of during the period before the development of œdema. When much œdema is present, periods of oliguria alternate with those of polyuria. Anuria is frequently an initial symptom in acute cases, and may occur also during the accumulation of œdema in the more chronic conditions. When the patient's weight is more or less stationary the amount of urine excreted is usually about normal. Nocturia is seldom seen.

The intense degree of albuminuria present in nephrosis persists as long as any symptoms are present, and often much longer. This may be for many months, and the consequent depletion of body protein suggests some of the therapeutic measures that may be employed. Generally speaking a decreasing amount of albumen in the urine indicates improvement.

The temperature is often subnormal, with frequent rises from trivial or undiscoverable causes.

The anæmia in acute cases is usually more apparent than real, but in the chronic disease becomes so severe that diet and medicine alone are inadequate treatment. Simple transfusion, which at once cures the anæmia and increases the blood proteins, is indicated.

The hypersusceptibility of these children to secondary infection is but too plainly evident throughout their illness. Such infections are the most frequent cause of death. This proneness to infection applies not only to infections of the upper respiratory tract but to those of operative wounds of any kind, thus necessitating the use of most careful technique at all times.

DIAGNOSIS

Little difficulty in making the diagnosis is encountered in most cases. The presence of œdema and albuminuria associated with the absence of hæmaturia, and the normal blood pressure in cases uncomplicated by cerebral œdema, justify a diagnosis of nephrosis.

The laboratory findings have been described in a previous paper.² Those that are pathognomonic are the lipæmia, the low blood

protein, and the absence of any increase of the nitrogen end-products of the plasma. Characteristic changes in the urine are the large amounts of protein it contains and the number of casts and white blood cells usually found microscopically.

A differential diagnosis between nephrosis and œdema due to a congenital anomaly of the kidney must sometimes be made in infants. In the latter, urinary symptoms, such as anuria, are usually more severe and persistent, and the blood chemistry test shows evidence of nitrogen retention. In patients of this age, nephrosis must be distinguished from syphilitic nephritis or nephrosis because of the invariably fatal outcome of the latter. In luetic cases, physical examination reveals splenic and hepatic enlargement or other signs of lues, and the lipæmia is much more marked.

PROGNOSIS

Two important factors in the prognosis have been mentioned, *viz.*, the age of the patient, and the mode of onset of the disease. Practically all children under eighteen months of age recover completely, unless the cases are luetic in origin or a fatal secondary infection occurs. The rate of recovery and its completeness vary directly with the speed with which the symptoms develop. Fifty-five per cent of those of all ages with an acute onset recover, whereas in only about 20 per cent of cases which have developed slowly is there complete recovery.

The practicability of removing focal infections completely is another influential factor in predicting the outcome in any case. It is quite well-known that removal of infected teeth and tonsils has not met with the degree of improvement anticipated in this type of renal lesion, but we now know that this is because in their removal we have only partially eradicated the infective foci. Further search for more obscure foci is indicated.

The absence of complicating infection, particularly tuberculosis, and of other renal lesions, considerably improves the outlook.

As pointed out in a previous paper,² functional tests and chemical blood tests, particularly as to the kidneys' ability to concentrate, and the degree and persistence of the hypercholesterolemia may prove of some prognostic value.

TREATMENT

1 *Rest*—Rest in bed should be enforced in all acute cases and during the acute exacerbations in chronic ones. Little is to be gained by prolonged stay in bed after chronicity has become established. Indeed many chronic cases show definite signs of improvement when allowed up and about.

2 *Focal Infections*—The removal of focal infections in these cases is as important as it is in other types of kidney disease, but the foci are usually more obscure and their removal more difficult than in the more obvious types found in acute glomerular nephritis. Offending teeth and tonsils should first be removed, because, although their removal causes little amelioration of symptoms, a very common source of secondary infection is removed. Thorough search for further infective foci in the accessory sinuses and in the intestine should now be made and proper treatment instituted.

3 *Diet*—The low blood protein, high blood fat, and absence of nitrogen retention in these cases suggested to Epstein^{3, 4} the advisability of using high protein, and low fat and carbohydrate diets in their treatment. Carbohydrates were to be kept low because protein would be better utilized, and because their excessive use causes fluid retention. Such diets as originally described consisted of 120 to 240 gm of protein, unavoidable fats 20 to 40 gm., 150 to 300 gm of carbohydrate and salt to make the diet palatable, with 1200 to 1500 cc of fluid included in the food as a minimum for the patient's comfort. Such diets have met with varying degrees of success in the hands of various observers. Certain modifications must be made in adapting these diets to the use of children, and when these are made they are to be recommended in the treatment of the chronic cases. In acute cases, it is better to use diets such as outlined in a previous paper,⁵ consisting largely of milk, fruits and vegetables with no added salt, and protein adequate for the child's requirements, approximately 50 to 60 gm daily.

The modified Epstein diets advised for use in chronic cases are as follows. In infants, unsweetened protein milk affords the easiest means of providing a relatively high protein, low fat and carbohydrate diet. It may be used even in acute cases of this age. As improvement occurs,

fruit and vegetables suitable to the age of the child, junket, chicken, bacon and, later, cereals are added. In older children 80 to 100 gm of protein, or nearly twice their requirement, are given daily. Carbohydrates are kept low by using large quantities of green vegetables and fruit. The liberal use of these not only furnishes an abundance of whatever protective substances against renal injury they may possess but aids materially in overcoming the secondary anemia present. The salt intake is restricted to that contained in the milk and vegetables given. Fluids are limited to 1,000-1,200 cc daily.

4 *Medication*—Diuretics must be given first place in the consideration of the drug therapy in nephrosis. The persistence of the edema and its gradually increasing resistance to all drugs make its treatment a serious question. Urea is one of the earlier recommended drugs used and is still employed very frequently to advantage in these cases with no nitrogen retention. Doses of 1-2 gm (15-30 grains) may be given thrice daily. It appears to be most beneficial in infants. More recently, the use of acid-producing salts to produce diuresis has become common. Either calcium or ammonium salts may be used. The chloride is the best one to use. Ammonium chloride is more powerful and much less nauseating than calcium chloride, and for these reasons its use is advised. Large doses (1-3 gm), (15-45 grains) must be given two or three times daily. After producing diuresis it should be at least temporarily discontinued. In patients in whom myocardial failure is present, it is best to use digitalis as well.

Another diuretic of an entirely different type is thyroid extract. It probably acts by stimulating the general metabolism which is usually low in these cases. It is worthy of trial in cases resisting other diuretics, as the therapeutic test is about the only one which demonstrates in which cases it will be effectual.

Finally, in chronic cases, where the edema increases despite the proper use of the diuretics mentioned above, one may be forced to use novasurol or merbaphen. This is an organic mercury compound which acts as a powerful diuretic but unfortunately it is a kidney irritant. It should never be used in acute cases of this disease nor in any other type of nephritis. Johnstone and Keith⁶ have recently

demonstrated that the preliminary use of small doses diminishes its toxicity and results in the acquirement of some degree of immunity to its toxic nature when larger doses are given later. The drug must be given intravenously. One-fourth of a cubic centimetre may be given as an initial dose, increased every second day until 1 c.c. is given at the third or fourth injection. Once diuresis starts it should be discontinued. A preliminary course of ammonium chloride for three or four days enhances its action.

Special measures are needed in cerebral oedema, in that the excessive fluid must be withdrawn from the cranial cavity and then diuresis established to prevent its recurrence. Two methods of treatment are practised. In one, a lumbar puncture is done and the cerebrospinal fluid withdrawn very slowly to prevent such an accident as an impacted medulla occurring, ammonium chloride is given by the mouth and saline purgatives by the mouth or bowel. In the second method, 1 per cent magnesium sulphate is given intravenously. Care must be taken that it is given slowly, 1 to 2 c.c. per minute, and that the total amount given does not exceed 10 c.c. per kilo of body weight. The injection is not infrequently followed by a transitory increase in the blood pressure and in the severity of the symptoms. This is succeeded in one-half to one hour by marked improvement in the patient's condition and a fall of blood pressure. Fifty per cent magnesium sulphate, 1 to 2 ounces, is given by the bowel every four hours until catharsis is established. Ammonium chloride is given by mouth. Usually the improvement is permanent, but in some few cases a second injection of magnesium sulphate is needed 12 to 24 hours later. It should not be given sooner than twelve hours after the first.

In cases of anuria, the exhibition of ammonium chloride is not infrequently adequate in starting a flow of urine. Should this measure fail, hypertonic glucose solution (20 per cent)

should be given intravenously. The injection of 300 to 500 c.c. of this solution seldom fails to produce satisfactory results.

5 Operative—In addition to the operations needed to remove focal infections and in the cure of secondary anaemia by transfusion, two others are used in the treatment of this disease. First and most frequently required is that of aspiration of the excessive fluid in the chest or abdomen. There are two indications for the mechanical removal of this fluid. First, the accumulation may be so great as to cause cardiac or respiratory distress of so urgent a nature that rapid relief must be given, and this is best accomplished by paracentesis. Secondly, when marked ascites is present and the oedema not very responsive to drug therapy, aspiration of larger amounts of ascitic fluid on two or three occasions often produces satisfactory results. Great care must be exercised not to introduce secondary infection.

The other operation used is that described by Edebohls of stripping the capsule of the kidney. This should not be done until other measures have failed, as the operative mortality due to secondary infection is high. Two such operations have been done at the Hospital for Sick Children. One resulted in striking benefit to the patient, the other ended in death a few weeks later from secondary infection.

6 Hydrotherapy—Hot packs have been and are still used in treating oedema in these cases. We have found them useless, and were unable to demonstrate, by weighing the patient before and after, that any fluid loss at all occurred. Some patients even gained weight. Local hot packs over the bladder and kidneys are sometimes useful in treating anuria.

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The Pathogenesis of Raynaud's Disease—Iwai and Nin conclude that Raynaud's disease is due to the operation of auto-haemagglutinins and not to a vaso-motor neurosis. The attacks are due to mechanical

occlusion of the vessels in consequence of the agglutination of the blood corpuscles, a condition of things precipitated by exposure to low temperatures.—*Die medizinische Welt*, June 16, 1928

ANTI-TUBERCULOSIS MEASURES IN RURAL DISTRICTS*

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EVEN at a World's Congress we cannot pretend to be internationals but must speak each in his own tongue, each from his own viewpoint, and each largely about his own country or province or locality. We can just bring our own national product, with its peculiar local form or colour or flavour, to this great international fair. In spite of peace-parleys and trans-oceanic flights the shadows of Babel still hang over us.

In any country city-dwellers become world-citizens fairly easily, but rural people are more conservative and national in speech and thought, customs and usages. Even within any one country there can be great differences. In Canada, at any rate, west cannot speak for east, or east for west, on any matter of importance. While modes of thought thus differ, and customs and conditions differ also, principles are of more universal application, and the plans of the smallest village can be at least suggestive, even at the antipodes. And it is well worth noting that the fall in the tuberculosis death rate has been greatest in cities and least in rural areas.

My place of work, and therefore necessarily my text, is Manitoba, the central province of the Dominion of Canada. It has a considerable area of wild unsettled land, and a total population of 600,000, one-third being in a single large city. In typical settled rural areas devoted to farming, the population is about ten to the square mile. The chief occupation is farming, though in the non-agricultural parts of the province mining has begun. Most farmers own their farms. The chief anti-tuberculosis effort centres around the Manitoba Sanatorium, with 280 beds, a voluntary institution, performing provincial functions and having a fair measure of provincial and

municipal support. There is, besides, a hospital of one hundred beds, whose particular "parish" is the City of Winnipeg only, while the sanatorium has an interest in both city and country, especially the country.

The Manitoba Sanatorium was begun with the idea that the treatment of sick people, at an early stage of pulmonary tuberculosis, was its greatest, almost its only, function. But much water has flowed under the bridge since that time. We have learned that a sanatorium, like any other group of good citizens, cannot altogether choose its functions, but must take the situations as they are and perform any function that will be most useful in changing conditions for the better. So tuberculous patients have been taken in and cared for in late as well as early stages, indeed, more late than early, sometimes even moribund, tuberculosis of all organs and all forms, and sometimes non-tuberculous pulmonary conditions as well. Teaching began with patients, spread to doctors and nurses and to the people of the province generally, and has been perhaps most serviceable of all since the students of the provincial medical school began to come, fifteen years ago. They have come ever since, practically all of them.

At the very beginning we saw the importance of better and earlier diagnosis, and saw the duty of the Sanatorium in this part of the big work. Gradually we have gone farther and farther afield, and now are trying to cover our whole province, in diagnosis as well as treatment, and in search as well as diagnosis.

Every tuberculosis sanatorium and hospital should have its own parish, its own field of work, be it city, county, province or state, and all within that area that relates to anti-tuberculosis effort should have a common centre. In rural areas we believe that centre should be the sanatorium. It should not be considered a work of supererogation for a sana-

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torium to do systematic missionary work throughout its territory, but one of its primary and principal duties. Diligent search for people in its own local field may be quite as worthy a work as research in the broader field of tuberculosis in general, and one will be quite as instructive as the other.

In the past three years the particular parish of the Manitoba Sanatorium, the rural areas of a prairie province, has been fairly extensively and intensively cultivated, and we are beginning to learn how very workable and fruitful these methods are, and how well suited to rural areas. Members of the medical staff, with a public health nurse, have gone out in parties of two, three, or four, with a portable x-ray apparatus and a technician, to conduct "clinics" here and there throughout the province. Most of the centres have been small "towns" of two or three hundred to a thousand population. Each clinic draws from one to two hundred people for examination from a circle fifty to eighty miles in diameter. City people demand care at their own doors, in Manitoba as elsewhere, but the more widely country people are scattered, the farther they are willing to travel for this or any other purpose. It is as easy to bring the country suspect forty miles for an examination as the city suspect from the next block.

In good time before a "clinic," all doctors in a considerable area have been communicated with, indeed, all in the province have had notices. Public health nurses of special experience have traced up "contacts" and persuaded them to come. Such a "clinic" continues usually through two days and takes from six to ten "doctor-days," a big "doctor-day" being about twenty-five average examinations. Of real suspects not so many can be examined. X-ray plates, single, or stereoscopic when necessary, are made freely. Indeed, few patients are seen without x-ray plates. It is in these doubtful or borderline cases that plates have their greatest value. A few plates can be developed at the time, but most are carried back to the sanatorium to be developed and read at leisure. Ample notes are taken and as soon as possible after a "clinic" the evidence in each case, including that of the x-ray plates, is summed up, typed and sent back to all doctors concerned, health

officers, health departments, etc. One copy of a report of the one hundred and fifty or more examinations in one such "clinic" runs to about thirty closely written pages.

Without the hearty co-operation of the local doctors such a visit of the sanatorium staff would be a failure, or at the best would do harm as well as good. But we have never in even one case failed to get this co-operation. Why should we, when we bring the best we can in diagnostic facilities and skill and place them freely, *and free*, at the disposal of any patients the doctors care to bring? In such "clinics" and with the sanatorium itself as an all-the-year-round stationary diagnostic centre, we have in fourteen months examined about 3,500—mostly contacts and suspects—about one in a hundred of the rural population of the province.

Now, one in a hundred taken at random is just 1 per cent, a small proportion. But a well chosen one, searched out of a hundred by following clues, a one in a hundred made up altogether of contacts and suspects, a one in a hundred that includes most people the doctors and nurses know of, or that official records of illness and death lead to, such a one in a hundred, may, and indeed does, take in a very considerable proportion of the people who need most to be examined. From 50 to 75 per cent of those so far examined were known to be "contacts."

Many old sanatorium patients and others known to have had tuberculosis are seen, and this is very desirable, especially when the reviews are made by members of the sanatorium staff who already know these patients. But the sensational feature of the summing-up of these journeys is the number of *discoveries* of disease made in them for the first time. In a considerable series of examinations 12 per cent were found to be tuberculous, nearly one-third of these in the active stages. In the same series 11 per cent besides were suspected and considered in need of careful watching. So when the group examined is made up of contacts and suspects and known cases not under institutional treatment, the definitely tuberculous have been found to be one in eight, the actively tuberculous one in twenty-four and, besides these, the definitely suspected of disease, one in nine. These "clinics" evidently gather in fairly well those who need to be seen and known, and treated or kept under observation.

The amount of disease and disability found, apart from tuberculosis, is another sensational finding. Of the people seen only a few consider themselves really ill or are at present under doctors' care. Even those found to be ill have not yet made the decision that they need medical care. Yet, among these fairly ordinary members of the community, besides tuberculosis, 11 per cent had septic infection of the lower respiratory tract, one-fourth of whom had reached already a stage of definite bronchiectasis, 28 per cent had very bad teeth and gums, and 25 per cent septic tonsils, both of which were keeping up filthy mouth conditions, impairing health and even, in most cases, already causing definite symptoms. A few very various disabilities and diseases were found also, in heart and cardio-renal relations, gall bladder, pelvis, intestine, nose and throat. Among others were gonorrhea, arthritis, trachoma, infected sinuses, varicose veins, chorea, dysmenorrhœa, actinomycosis, blood dyscrasias and, as would be expected, asthma, hay fever, malnutrition, rickets, empyema and many pleurisies.

PRINCIPLES STATED

This brief account of the development of anti-tuberculosis work in the rural areas of a prairie province has already indicated something both of things done and conclusions reached. Some of the main principles of the work as we see them might be put down a little more fully.

A first principle, we consider, in both sanatorium and field work, is that tuberculosis is a family, community, and state problem, as well as an individual problem. When even one man in a province or country is tuberculous, that province or country is to that extent tuberculous. Treatment of the sick man—compassion first—may make the stronger appeal to most people, but treatment of the infected state—safety first—is the more important measure. Cure is good but prevention is better. The history of epidemiology shows that disease has been conquered more by prevention than by cure. But, fortunately, the cure of the tuberculosis of the man and the cure of the tuberculosis of the state can go on well together, indeed, the cure of the sick man is an important part of the cure of the sick state. Still it must never be forgotten that

when even one man within the confines of one state is tuberculous there are the two separate and distinct interests, the interest of the man and the interest of the state, and the interest of the state is paramount.

A second principle, old and familiar, yet, like many other old and familiar principles, such as the Ten Commandments and the Golden Rule, needing to be restated often if it is not to be forgotten, is this, that *every case of tuberculosis comes from some previous case*. Whatever environment may be, and it is a tremendously important matter, there can be no infection and no disease without the actual transference from one individual to another, directly or indirectly, of the germs or seeds of disease. Life comes from life, wheat from wheat, tares from tares, and tuberculosis from tuberculosis. If every single present case, therefore, were fully dealt with by diagnosis, observation, treatment, segregation and adequate control, there would be no future cases. There will be tares among our good grain to-morrow only as we allow tares to grow and ripen and scatter in our fields of grain to-day. There will be tuberculous disease and tuberculosis deaths to-morrow only as we allow tuberculosis infection to slip through our fingers and scatter throughout families and communities and through the whole land to-day. From what we have sown we reap some good grain, but mixed and shrivelled by the tares we have allowed to sow and re-sow themselves in all our fields.

Since each diseased person is a potential scatterer of disease, and usually a daily and hourly scatterer of disease, the big job is to find diseased persons, to make them safe by treatment, or keep them safe by segregation or education, and to search diligently among all who have been in contact with open disease for evidence of infection. It is the big work of the state, or of the volunteers to whom the state sometimes delegates the work and responsibility, to use all the means they can command to make the contacts, the infected and the openly diseased people as safe as possible for themselves, safe for their families, safe for their communities and safe for the country at large, if possible, *absolutely* safe. First, they have to be found, then treated, segregated, supervised and controlled. That needs machinery for case-finding, diagnosis, treatment, segregation. That means the treatment of ac-

tively diseased people as early, as late, and as long as treatment is necessary, the segregation or effective control of spreaders while they are spreaders, and as soon and as long as they are spreaders

This program demands beds, many more beds than most countries or provinces have at the present time, beds in sanatoria, beds in hospitals, beds in places of "preventorium" type, but, always beds, plenty of beds, beds waiting for the people, not people waiting wearily month after month for the beds, beds for treatment, for observation, for segregation, even beds to die in, so that family and friends may not suffer from the last fatal seed scattering from the tuberculosis deathbed. What is the use of finding sick and infective people if we can just wish them well and leave them as we find them? The farmer's indispensable tools are plough and reaper, the carpenter's, axe and saw, the state's indispensable tools in dealing with tuberculosis are a clinic to find cases and a sanatorium or hospital bed to treat and segregate them. With beds enough to take in all who need to come, the very day they are found—the suspected, the active, the not-yet-very-active, the hopeless—the campaign would pass into an entirely new phase. Our worst problems are really the problems of trying to struggle along without beds. The call is for beds, more beds, beds for all needs,—

BEDS

It cannot perhaps be raised to the status of a principle, but can be put down as an observation, that tuberculosis infection is not as a rule passed from person to person of the same generation, but from persons of one generation to persons of another. In an infected circle, suspect the older people as the source, parents and grandparents, uncles and aunts, rather than brothers and sisters and cousins.

It is a truism that early disease does not declare or report itself, or come automatically for treatment, but must be hunted for. Much the same is true of moderately advanced or advanced disease. It also must be hunted for. Most things we want to find must be hunted for, such as gold, silver, precious stones, knowledge, skill. They do not drop themselves down at our doors. Not much of value comes to us without trouble and sweat. Tuberculosis which is left to find itself usually staggers in

hopeless, after spreading the seeds of disease broadcast throughout family and community. If people are to be made safe for themselves and the community, at the right time and in the right way, they must be hunted for.

Our whole plan of dealing with sickness is a poor plan. Modern medical science is wonderful, but the system of applying it to the needs of people is mediæval. Under this system the first diagnostician is always unskilled, and always has a motive for postponing diagnosis, the first diagnostician being the sick or suspected man himself. Before he even says "Good-day" to the man of skill, the physician, the sick man must decide, first, that he is sick and, second, that he is sick beyond the ordinary means of repair, such as rest which he can himself apply, and so needs skilled diagnosis and treatment. The skilled man comes in only after the unskilled man has made these two decisions, and he almost always makes them late.

The ideal solution, of course, would be that all people, rich or poor, in country or city, intelligent or ignorant, sick or well, or half-sick or half-well, should each year, or each half-year, be looked over thoroughly, system by system, function by function, part by part, with the use of x-ray plates, and an appraisal made, and a decision reached as to what repairs are necessary. Such an examination would necessarily be costly, for if not made well it is better not made at all. But this plan belongs to the future. People in general are not ready to ask for such examinations, and medical men, in our country at any rate, are not quite ready to make them. It is about time, however, that such routine examinations, for admission into training schools of hospitals, or into the army, or of an immigrant into a new country, should be made in this thorough-going way, and always with x-ray plates of the chest at least.

In the meantime, while waiting a half-century for the more perfect plan, we must fall back on some such temporary plan for case-hunting as the one already described. And even with this partial plan we will get most of what we are looking for, if we bear in mind that each case of tuberculosis comes from some previous case, if we trace up open disease and death, wherever they have been, and concen-

trate on contacts and suspects and known disease

One principle about such a survey is that it should be both intensive and extensive. If there must be a choice, let it be intensive. Make few examinations thoroughly, with good facilities and skill, rather than twice as many hurriedly, with fewer facilities and less skill. Even with all facilities in office or hospital, the boundary line between the tuberculous and the non-tuberculous is often difficult to define without leaving many under the Scotch verdict "Not proven." Out in the country, away from office and hospital, the difficulty is greater, therefore, such work should be careful and deliberate, and well-made, well-read x-ray plates are a necessity.

We consider it quite the best plan, almost an essential part of the plan, that this work should be done by members of the sanatorium staff. As has been stated, each sanatorium has, or should have, its own parish, its own field to cultivate, and in this field should search, diagnose, treat, teach and supervise. Sanatorium men need to see where tuberculosis grows, and how it grows, that is, they need field work, and cannot keep proper breadth of view without it, and on field work all the time men grow stale, lose the infective enthusiasm such pioneer work needs, and are better to come back for a time to the variety and orderliness and facilities of sanatorium duty. The outside clinic, an occasional part of the sanatorium staff man's duty, say, one week or month out and two or three or more weeks or months in, might be a good arrangement.

Finding people who need treatment, bringing them in for treatment, following them after treatment, getting in touch with their families and their doctors, and keeping in touch, is much more likely to be done well by one organization than by several. No sanatorium is doing its duty by its parish, or by itself, which has not a clinic with a wide-open door, and if the clinic be just extended and multiplied to cover the whole of the sanatorium parish, be it county, or province, or state, or country, the benefit all round is much greater. Experienced medical men, with the standing of sanatorium staff positions, if they have the skill they should have and any personality at all, should be welcomed by any doctor in any community.

A necessary part of the plan, which makes for good feeling between sanatorium and physician, is that every bit of work done, every examination, every note, every x-ray plate reading, every recommendation, shall be communicated to the doctor of the person examined. In small communities, where people go from doctor to doctor, the easiest plan is to send a full report of all cases to each doctor. Reports are sent also to public health departments, municipal health officers, etc.

While the examination is primarily of contacts and suspects, and to rule out or rule in tuberculosis, still, once the man has come in, the examination should be as full as possible, and deal not only with tuberculosis but with general health. Bad teeth, septic tonsils, bad posture, malnutrition, should be enquired into and brought to the attention of the regular physician. The physician, it must be remembered, sees in the community only those who consider themselves sick, and sick enough to need his services, and few of the people we class as contacts consider themselves in these categories.

Another principle of importance is that anti-tuberculosis work should impose as little financial burden as possible on the ordinary individual. Treatment may usually need to be paid for in whole or in part by the sick man or his family, but in dealing with a long-drawn-out disease like tuberculosis payment is almost always a hardship, or in time becomes a hardship, almost always tends to postpone or limit the time of treatment, and often prevents treatment altogether. The burden of treatment of the indigent should be carried by the community in some form, and there is no reason why ordinary good citizens should not be at least part carried in the same way. A plan along this line in Manitoba, the treatment of the poorer people wholly carried, and of the ordinary people part carried, by a general municipal levy, has brought into the sanatorium three or four or five times as many as ever came before, for their good and the good of their families, their communities and the province at large as well.

After all, when a man with far-advanced, hopeless disease is found and sent to a hospital, who is it that benefits? The man often would prefer to go on as he had done before. Segregation to him may mean almost unwilling imprisonment, though safety for the community

All diagnosis, treatment, segregation and observation of a tuberculous person is diagnosis, treatment, segregation and observation of a tuberculous community or state. Almost everything we do is partly for the man's good and partly for the state's safety. In so far, then, as the man is treated to make the state safe, the state should help with the burden of payment. The state of the future, perhaps as municipalities, may carry the whole burden, and the tendency is very definitely in that direction in the western Canadian provinces.

The state, whether by municipalities or provinces or countries, cannot do everything the people need, out of ordinary revenues. Indeed, the state has already become a sort of community cow, that everybody wants to milk and nobody wants to feed. But the science of spreading over the community the burdens of things we need has not advanced so very much since the days when Matthew the publican sat at the receipt of custom. The state, it is true, cannot pay for all needed things, but it should do what is better, that is, plan for all. We need money much, but we need plans more.

Treatment should be free for those who cannot pay, but there is little doubt that diagnosis, at any rate, in occasional district clinics by a sanatorium staff, should be free for all. This is essentially missionary work, that is, work done by those who see a need for those who have a need but do not see it. The big thing is to have the people who need to be dealt with, *dealt with*. If everything done to eradicate tuberculosis were to be charged back upon the individuals who benefit, all anti-tuberculosis effort would

stop this very day. Meantime, many good services have to be more or less the voluntary services of forward-looking citizens. The case finding of the Manitoba Sanatorium has been so far a voluntary service, the only special fund for which has come from the sale of Christmas seals.

Such "case-finding clinics" find late, unreported cases. They find early cases among the contacts and suspects. They find many disease conditions, major or minor, other than tuberculosis. They keep up some supervision of those who have never been hospitalized and of others before and after hospitalization. All these things are of great importance. But perhaps they do most in what they teach. For, after all, *things done* teach more and better than *things said*. These clinics, by what they do, even if nothing is said, teach the community that tuberculosis spreads like noxious weeds, that each case comes from some previous case, that as ripe weeds are sure to have circles of seedlings around them so neglected tuberculosis cases are surrounded by infected "contacts," that the apparently well must sometimes be suspected, that the routine examination of the well is a good principle, and that tuberculosis contacts are in a special class and should be watched. They teach also that tuberculosis is not a stroke of fate but the effect of causes, that in part at least it can be controlled, and even banished, by man.

The best anti-tuberculosis measures we have discovered for rural districts are sanatorium beds, sanatorium clinics, stationary and traveling, and sanatorium teaching.

Clinical Experience With Irradiated Ergosterol — It is the opinion of Alfred F. Hess and J. M. Lewis that irradiated ergosterol is by far the most potent of the antirachitic agents. It is an absolute specific. Cod liver oil in the amount of which it can be given is a specific of limited dependability—only moderately effective for the average infant, uncertain in action for the rapidly growing infant, and ineffective for the premature. Irradiated ergosterol is quite as valuable in tetany as in rickets, and in both disorders is remarkable for the rapidity as well as for the reliability of its action. As yet, however, no sufficient clinical experience has been had to define its proper dosage. Furthermore, the various preparations cannot be evaluated, as they have not yet been assayed on the basis of the number of

"curative units (rat)" which they contain. The amounts now recommended and employed are unnecessarily high, as shown by the fact that they induce an excess of calcium and inorganic phosphorus in the blood in the normal as well as in the rachitic infant—hypermineralization. Too great emphasis has been laid in rapidity of action. It would seem advisable, before distributing unreservedly to the medical profession this potent concentrate, to make a more thorough clinical study of its dosage, as has been done in regard to other potent extracts. In view of its reliability, its high degree of activity and its ease of administration, irradiated ergosterol should prove a most valuable addition to the rapidly increasing fund of specific antirachitic agents.—*J. Am. M. Ass.*, 1928, xc1, 783.

INGUINAL HERNIA AND ITS RELATION TO COMPENSATION

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THE term "traumatic hernia" has been used rather loosely to designate, (a) cases which appear during or following some effort, (b) those due to direct violence, and (c) those due to some disorder of the muscular mechanism of the groin. The term should be applied to cases in which the hernia appears immediately after violence severe enough to cause a severing of the overlying muscles and protective fascia, if not of the skin.

The majority of herniæ have been designated as "effort" herniæ, which means that they are not the result of one effort alone, but the cumulative effect of repeated efforts, such as lifting, coughing, sneezing, straining at stool, with at some time, perhaps, unknown to the individual, a sudden effort (that in a normal man would be harmless) which converts a partial or incipient or potential hernia into an actual one.

A true "traumatic" hernia should call for compensation if the individual be engaged in work as an employee at the time of injury. On the other hand "effort" hernias are the cause of much trouble in deciding if compensation under the same circumstances should be allowed.

Mock¹, in his article "Compensable Hernia," points out that the English courts prior to the compensation days made the decision that traumatic hernia could occur only from a direct violence resulting in a definite tearing or rupture of the abdominal wall. All other herniæ were considered to be due to congenital defects, and were similar to all other diseases which might occur coincidental with occupation, but not related to it. The decision of the English courts at that time was no doubt arrived at chiefly on their understanding of the etiology of hernia. This entailed an understanding of the anatomy and embryology of the inguinal region. It is my purpose here to review these, so that we may see things perhaps in the same light as did the English courts.

ANATOMY

The inguinal region is the lateral region of the lower zone of the abdomen. Through it runs the inguinal canal which contains the spermatic cord and the ilio-inguinal nerve in the male, and

the round ligament of the uterus and the ilio-inguinal nerve in the female. It is an oblique canal about four cm long, slanting downwards and medialwards and placed parallel with and a little above the inguinal (Poupart's) ligament. It extends from the abdominal inguinal ring (internal abdominal ring) to the subcutaneous inguinal ring (external abdominal ring). It is bounded posteriorly by the transversalis fascia, extraperitoneal connective tissue, peritoneum, conjoined tendon, and reflected inguinal (Poupart's) ligament, above, by the arched fibres of the obliquus internus and transversus abdominis, below, by the union of the transversalis fascia with the inguinal ligament and at its medial end by the lacunar ligament, in front by the integument, superficial fascia and aponeurosis of the obliquus externus throughout its whole length, and by the obliquus internus in its lateral one-third. The space between the inferior margin of the transversus abdominis and the inguinal ligament is protected by the transversalis fascia, reinforced throughout most of its anterior surface by the conjoined tendon and interfoveolar ligament.

The conjoined tendon of the obliquus internus and transversus is formed mainly by the lower part of the tendon of the transversus and is inserted into the crest of the os pubis and pecten pubis, (ilio-pectineal line), immediately behind the subcutaneous inguinal ring, thus serving to protect what would otherwise be a weak part in the abdominal wall.

The interfoveolar ligament (of Hesselbach) is lateral to the conjoined tendon. It is a ligamentous band, sometimes containing a few muscular fibres, extending from the inferior border of the transversus muscle to blend inferiorly with the inguinal ligament. When well developed, the edge of the conjoined tendon and interfoveolar ligament blend so that no medial inguinal fossa exists. Thus, with a well developed transversalis fascia, which is usually a strong fibro-aponeurotic layer, is sufficient to retain the viscera within the abdomen. The spermatic cord in the male and the round ligament of the uterus in the female pass through the transversalis fascia at a spot called the abdominal inguinal

ring, (this opening is not visible externally since the transversalis fascia is prolonged on to these structures as the infundibuliform fascia) Passing along the inguinal canal they pass out through an interval in the aponeurosis of the obliquus externus, just above and lateral to the crest of the os pubis. This interval is known as the subcutaneous inguinal ring.

Sir Arthur Keith² considers that there are two guards to man's inguinal canal, an inner and an outer. The outer guard consists of that part of the external oblique which arises from the 8th, 9th, and 10th ribs, and ends over the flank on each side of the external ring. With every effort we make, this muscular guard is set reflexly into action and strengthens the outer wall of the inguinal canal. The inner guard consists of the inguinal ligament, conjoined muscle, and that part of the internal oblique and transversalis which, rising from the outer part of Poupart's ligament, passes above the internal ring, to end in the conjoined tendon. When the conjoined muscle contracts it acts as a shutter rather than a sphincter. The lower edge becomes closely approximated to the inguinal ligament, thus closing the inguinal gap. This conjoined muscle frequently has a high origin from Poupart's ligament, is poorly developed, and, instead of consisting of heavy muscular fibres, is replaced by a thinned-out aponeurotic layer, with a short muscular belly, thus leaving a portion of the transversalis fascia with little or no support. It is in these cases that direct herniæ are found.

Inspection of the peritoneal aspect of the inguinal region, when viewed from behind, will show the peritoneum raised in five folds by more or less prominent bands which converge to the umbilicus. The middle umbilical ligament, situated in the middle line, is covered by a fold of peritoneum known as the middle umbilical fold. On either side of this a fold of peritoneum round the obliterated umbilical (hypogastric) artery forms the lateral umbilical fold. To either side of these cords is the inferior epigastric artery covered by the epigastric fold. Between these raised folds are depressions constituting the so-called foveæ. The most medial of these foveæ, situated between the middle and lateral umbilical folds, is known as the supravesical fovea. The intermediary fovea is on the medial side of the epigastric fold and is termed the medial inguinal fovea. The third fovea is lateral to the epigastric fold and is termed the lateral inguinal fovea. The lateral fovea is naturally the

deepest of the three. From each fovea a process of peritoneum may be developed, if from the medial inguinal or supravesical foveæ, a hernia of the direct type descends, if from the lateral inguinal foveæ, whose floor corresponds to the abdominal inguinal ring, a hernia of the oblique type descends. Often the obliterated hypogastric artery is represented by a fibrous cord and is seen coursing over the dome of a direct sac, causing the sac to bulge forward on either side of it. Oblique and direct herniæ very often coexist in the same patient, and on the same side. Nearly all large direct herniæ are accompanied by an indirect sac, being separated by the epigastric fold. These are by some called "saddle herniæ," and often the epigastric fold is almost indistinguishable, making it difficult to state whether the hernia started as a direct or an indirect hernia.

EMBRYOLOGY

In the early human fetus, long before the descent of the testicle has begun, there is found a strand or cord of tissue issuing from the substance of the groin and passing to the scrotum or labium majus. Cleland termed this inguinal strand the gubernacular cord. At the end of the fourth month of fetal life we find a plica of peritoneum running from the epididymis and testis down to the future site of the internal abdominal ring. Within the plica are included bundles of fetal non-striated muscular tissue. In the fifth month this muscular tissue undergoes a peculiar cellular hypertrophy forming the gubernaculum. The gubernaculum assumes a bulbous form, its thickened end being at its testicular extremity. In the latter part of the fifth and throughout the sixth month of fetal life, the peritoneum, and particularly the sub-peritoneal tissue, takes on a peculiar form of growth, evaginating the adjacent abdominal wall, and apparently pushing its way towards the groin. By the seventh month the gubernacular bud and its hood of peritoneum have made their way into the abdominal wall, the testis following. The gubernaculum retains the same length during the act of transit through the belly wall, this part of the process occupying the seventh month. Behind the testis a process of growth is at work, elongating the vas, the vessels and the peritoneum. By the eighth month the gubernaculum bud has traversed the abdominal wall, and by the ninth it and its hood of peritoneum have established themselves in the scrotum. The neck of the peritoneal di-

verticulum lying within the freshly formed inguinal canal is new. It has been specially formed during the period of descent, only the fundus of the diverticulum, the tunica vaginalis, is old. The peritoneal canal becomes obliterated. Sir Arthur Keith states that even in the third month after birth there are still thirty to forty children in every hundred, in whom the upper part of the canal is imperfectly closed.

Hamilton Russell³ believes that the presence of an abnormal developmental pocket of peritoneum is all that is required to produce a hernia, that practically all herniæ are congenital, that acquired hernia does not exist. In conclusion he states —

(1) Inguinal hernia in young subjects is caused by the presence of a congenital sac and there is no other cause.

(2) Acquired hernia in the young has no existence in fact.

(3) All cases of oblique hernia, occurring at any time of life, are in subjects who are the possessors of a congenital sac.

(4) Subjects who have never possessed a sac, or who have had the sac effectively removed, can never become the subjects of oblique hernia.

(5) I am unable to find any evidence of any kind in favour of the belief that oblique hernia ever occurs at any age independently of the presence of a congenital sac.

Sir Arthur Keith opposes this view and points out that the processus vaginalis remains open in nearly all animals—man and the gorilla being exceptional in having it closed—and in them congenital inguinal hernias are almost unknown. The presence of a developmental pocket of peritoneum cannot be the only factor involved, and is not essential. He holds that without such a pocket a hernia can be produced by the gut forcing its way into the inguinal canal through the shutter-like arrangement which acts as a guard to the inguinal canal. Any strain put upon the muscles forming this guard will cause them to contract reflexly, closing the opening and preventing the protrusion of the gut. Any failure of this contraction will lay the groin open to a hernia. He states that most of the herniæ of infancy take place into the funicular process, a sac of developmental origin, but that, after childhood, the sac and hernia are formed together and simultaneously. Given a weak point in the abdominal wall, there can be no doubt that the intermittent and repeated forces which are generated within the abdomen of every man and child are sufficient to protrude that weak but living and plastic area in the form of a hernial sac.

LEGAL VIEWS ON HERNIA

Evidence such as this would make one feel that the English courts were right in their decision, and because of such a decision at that time, few claims for traumatic hernia were made. Since then things have changed, and at present practically every case of hernia occurring while an employee is at work is the basis of a claim for compensation. This condition was brought about by broad-minded employers recognizing a certain moral obligation and realizing that any improvement in the condition of the employee rendered him more useful. They were little concerned whether there was such a thing as "traumatic hernia" for which they could be held legally responsible. If an accident occurred, even though these employers were not legally responsible, they felt that a moral responsibility was attached, and compensation and free surgical care were given. If they employed a man with a hernia they knew the industry was not responsible for it. If it grew gradually worse without any cause, again they were not responsible. But if, as a result of an accident or severe strain, the hernia became strangulated, at once doubt as to responsibility entered the case, and the decision was rendered in favour of the employee. If they hired a man who showed no sign of rupture at the employment examination, but later suffered an accident or severe occupational strain, and as a result hernia appeared, compensation and free surgical care were given because in the man's mind the accident caused the trouble. Such, says Mock, was the attitude of several concerns at the time of the passage of the Employee's Compensation Act. In fact these very laws were an expression of the new humane influence which had entered industry. The administration of these Acts was placed in the hands of industrial commissioners whose members were laymen rather than lawyers. Influenced by the generous attitude of certain industries, and guided by sentiment and a consideration of moral rights, combined with their meagre legal knowledge, the decision of these various commissions were often at variance with those rendered by the courts in the past. Thus, employees began to seek compensation for many conditions which heretofore had not been considered compensable, and included among them were herniæ which developed during employment.

Had the industrial world been of the same attitude as mentioned by Mock at the time of the passing of the first Compensation Act, no diffi-

culty would have been met in dealing with herniæ which became apparent while the employee was at work, but all were not of the same opinion, and for this reason many cases are left to the Courts, aided by orthodox and unorthodox medical evidence, to place the responsibility.

Under the present system in our courts, where the medical evidence, as heard by a judge and jury is always contradictory, and where one medical man's evidence bears as much weight as another, no matter whether he be a surgeon of vast experience, or a general practitioner with no surgical experience, great injustice may be done either employee or employer. In this respect it is felt that if the courts were to use the testimony of experts of the court's selection, and not of the selection of the claimant or defendant, greater justice would be rendered all concerned.

The term "traumatic hernia" should be confined to those cases which are the result of violence and show definite signs, or give definite symptoms, within the first twenty-four hours after injury. The others, which are included under the general name of traumatic hernia, are called by the German writers "accidental hernia." Patterson gives the following signs and symptoms as indicative of a traumatic hernia.

(1) Immediate descent of the hernia following the alleged injury or strain.

(2) Severe pain in the region at the time and following the injury, severe enough to require medical aid within the first twenty-four hours.

(3) Severe prostration, causing the employee to cease work immediately.

(4) Symptoms of such severity that they were noticed by the claimant and communicated to the employer within twenty-four hours after the occurrence.

(5) The trauma or strain must be adequate.

He felt that if two or more of the criteria are lacking, a case cannot be justly maintained to be of traumatic origin.

Mock advocates that the term "compensable hernia" be adopted to include all cases of true traumatic hernia, and all cases of accidental hernia, in which the force causing their development is directly the result of some unnatural occupational hazard. In favour of the hernia being due to "unnatural causes" we have the following—

(1) Definite proof that the hernia did not exist previously. As the burden of proof of a pre-existing hernia rests with the employer, a

physical examination of all applicants for positions in industry, no matter in what capacity, should be made.

(2) A definite history of an accident, or if hernia occurred coincidentally with strain or a severe effort far in excess of that which the man's muscular developmental stature or past experience in the occupation should call for. Such factors would compose the unnatural occupational hazards, as opposed to the natural strain of his ordinary work.

(3) The appearance of a hernia immediately or very shortly after the occurrence of one of these unnatural exciting causes.

(4) The examination of the hernia revealing that it is of small size, seldom as large as an egg, and usually within the canal or just appearing at the external opening.

(5) At operation the peritoneal sac is small, thin, and seldom protrudes throughout the entire length of the canal. Adhesions of the mesentery or viscera to the sac are never present.

In favour of the hernia being due to natural causes are the following.

(1) History or knowledge of a hernia already existing.

(2) History of hernia in childhood, which was apparently cured by a truss and has not been present for several years.

(3) Presence of hernia at some other abdominal orifice, showing a tendency towards this condition.

(4) Weakness of the structures forming the walls of the inguinal canal.

(5) A family history of hernia is a strong etiological factor in favour of the employee being congenitally predisposed to the condition.

(6) The age of the patient is an important factor in determining the natural or unnatural cause of the hernia.

(7) Other etiological factors, such as recent debilitating diseases.

(8) Certain conditions found during examination of the hernia which indicate that it was due to natural causes. For example a large hernia indicates its pre-existence, a discoloration or deep depression of the skin over the hernia indicates that a truss has been worn, and that therefore a hernia must have existed.

(9) The condition found at the time of operation will often indicate that the hernia was of long standing and therefore not due to the alleged injury, for instance, a thickened well formed sac,

adherent mesentery or intestine within the sac, and heavy fibrous bands in the hernial sac

From this it would seem that true "traumatic" hernia occurs rarely if at all and that the majority of hernie that come before our courts or commissions for decision are really "effort" hernie. All of these then, or almost all of them are of gradual production. Repetition day by day of straining at stool, stooping, lifting, coughing, and all other bodily movements force the semi-fluid abdominal contents against their containing walls, and gradually cause evagination of the weakest points of the abdominal wall, then the sudden effort, which in a normal man would be harmless, turns a partial or potential hernia into a larger one.

If the courts or commissions are to disregard gradual production and decide that this last

effort, great or small, is the cause of the man's hernia, and compensation be given, then all employees with partial or potential hernias are financial risks to their employers, a risk which would not be taken should the employer know of it, also those persons with an established hernia would not be eligible for any kind of employment, because of the fact that the gradual production as mentioned is going on and increases the size of the hernia, and at any time he could make a claim for aggravation.

It would therefore seem that the English courts were right in their decision made prior to the days of compensation.

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A CONSERVATIVE METHOD OF THE CONTROL OF UTERINE HÆMORRHAGE BY X-RAY

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UTERINE hæmorrhage is always an alarming condition whenever it is encountered and should be an indication for an immediate investigation as to its cause. Such bleeding may be caused by a great variety of conditions, but this discussion is limited to a type of case which shows very little if any gross evidence of disease. These limitations have been imposed because in the selection of cases for treatment by x-ray it is obviously unwise to include any case where the indications are clear-cut for surgical measures, such as the presence of large multiple fibroids, and again it is unwise to invade a field better served by radium, which field includes carcinoma of the cervix.

The group of cases here reported includes women from fourteen to fifty-nine years married and single, all presented as their chief symptom menorrhagia and many also metrorrhagia. The majority showed no evidence of gross abnormality on pelvic examination. A few cases which will be noted had small fibroids. Many cases with other complications have been treated by us with varying degrees of success. Some spectacular results have

been achieved, some have been most discouraging. Many such complicated cases have therefore been eliminated from this series, so as to present a description of a patient with a clinical entity which, when recognized, may with safety and assurance be referred to the radiologist for treatment.

The women treated not only were bleeding, but were bleeding severely. All of them had had some previous treatment, varying from rest in bed to repeated curettage, some were dangerously anæmic, and one woman was practically exsanguinated, to such a degree that a blood transfusion did not improve her to a point where she would be acceptable as a surgical risk.

At the beginning of the series five years ago, the cases came to us either because they refused a suggested hysterectomy, or because the general condition was not sufficiently good to allow a good prognosis following the shock of a major pelvic operation. In the last few years, our clinical group has recognized suitable cases and more promptly referred them to us.

The members of this group may be arbitrarily divided into three classes (1) the very young

girl who has but lately established her menstrual cycle and who develops an alarming menorrhagia, (2) the woman of childbearing age, whether puerperal or not, who complains of excessive bleeding at or between her periods, often accompanied by dysmenorrhœa, (3) the older woman at or near the menopause, whose profuse bleeding is alarming to such a degree that an artificial menopause, quickly produced, is considered advisable

The treatment in each class is bound to vary according to circumstances and perhaps this may be best shown by quoting illustrative case reports

CLASS 1

A girl of 14 referred with a history of severe bleeding at each period for a year, in fact from the date of first menstruation. She was pale (hæmoglobin 30 per cent), confined to bed, appetite poor, sleeping poorly. It was necessary here to do two things: (1) To arrest as soon as possible the bleeding which had made an invalid of this child, and (2) to preserve her menstrual function. Therefore, she was given an x-ray treatment over the pelvis anteriorly with the following factors: 5 milliamperes, 200 peak kilovolts, 50 centimetres distance, one millimetre of copper plus one millimetre aluminium filter, ten minutes exposure. The following day the same dose was administered over the posterior pelvis. This was repeated in four weeks. In the meantime she continued in bed. At the end of three months this child was up and about. Her hæmoglobin was 70 per cent and her menstrual flow was normal in amount with a three day flow.

CLASS 2

(a) A young married woman, of 29, with menorrhagia and metrorrhagia, two healthy children, has had an unsuccessful curettage. There was no gross disease in the pelvis, no obstetrical tears. She was unable to walk, bleeding continually. Hæmoglobin was 25 per cent. She was so ill that she expressed indifference as to the possibility of future pregnancies. She was given an anterior and posterior pair of exposures as above, except that the time was doubled, another pair at the end of four weeks, and a final treatment at the end of eight weeks. Her bleeding ceased at the end of eight weeks and she was amenstrual for six months. After that her menstrual cycle became normal. Her hæmoglobin reached 85 per cent and she gained thirty-five pounds in four months. There have been no pregnancies since the treatment.

(b) A married woman of 37, with pulmonary tuberculosis and severe uterine bleeding, and with such severe anæmia that she already showed cord symptoms. She was given four pairs of treatments at intervals of four weeks. Her bleeding ceased at the end of the fourth month, and she has not menstruated since. Subsequently, her general condition has very much improved and the chest condition is quiescent.

CLASS 3

(a) A spinster of 41, with menorrhagia and metrorrhagia for three years, bleeding for last twelve weeks steadily. Curettage six months ago with no relief. A pelvic examination was negative. It was decided to precipitate the menopause. Three pairs of treatments were given at intervals of four weeks with

complete cessation of flow and a gain of twenty pounds, and with none of the discomfort of an ordinary change of life.

(b) A married woman of 43 with no children, menorrhagia for five years off and on. Lately she has bled steadily. She was very irritable, anæmic, bedridden, a very difficult invalid. Pelvic examination showed a small fibroid but nothing else of note. To bring on an artificial menopause it was necessary to give her four pairs of treatments at intervals of four weeks. She still has regular menstruations of one day duration, some hot flushes, and occasional headaches, but she is doing her own housework and has gained weight.

Thirty-eight case reports are here reviewed. The reports quoted have been completed for at least two years. There have been no failures, in spite of the fact that three women did not receive the full prescribed dosage. These three were so much improved that they refused the final treatments. They were public patients and it is a noteworthy fact that free patients are more difficult to control than paying clients. Not all, but a majority, of the women suffered slight toxic sickness, which in no case was severe. It is desirable that these patients should spend the first month in bed and have as much rest as possible until the bleeding is controlled. There is no necessity for medication other than to give good food, provide plenty of sleep and fresh air and perhaps a tonic of iron.

The production of artificial menopause by x-ray is safe, rapid and satisfactory to the patient, because in most cases the unpleasant features of the menopause are cut short, if not obviated. X-ray control of uterine hæmorrhage in women of the childbearing age must be advised and prescribed carefully with reference to the possibility and desirability of future pregnancies, but in all our cases this was secondary to the necessity of preserving the life of the patient. Nevertheless, by judicious estimation of dosage, menstruation was preserved. This result has a decidedly good psychological effect if nothing else. It is in the treatment of the menorrhagia of very young girls that the radiologist finds his greatest problem, for such children have a long expectation of life and any interference with their menstrual functions may entirely discolour their outlook on life. Therefore, dosage must be cut down to the minimum and treatment stopped at the earliest sign of arrest. In our cases to date, only one pregnancy has been reported following x-ray therapy of the pelvic organs, and this was interrupted at five months due to extensive kidney damage.

POST-OPERATIVE VOMITING ITS CONTROL BY INTERSTITIAL INJECTIONS*

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POST-OPERATIVE vomiting, dreaded by the patient and often a worry to the surgeon, is a condition which is not considered seriously enough by many men who do operative work. Treatment directed toward the control of vomiting ought to be as much a part of the total surgical routine as the giving of morphine to relieve pain.¹ This does not appear to be the case.

Dolan¹ discusses the value of glucose, given intravenously, using insulin in sufficient amounts, as a treatment for severe and often uncontrollable post-operative vomiting. The thought comes to one, since this treatment works in pernicious vomiting, why not institute it earlier before the vomiting becomes severe, or even before it has started at all? Intravenous therapy of this kind requires the determination of the blood sugar, the CO₂ tension, etc., and the procedure becomes rather too technical for the average man to engage in.

For a number of years it has been a routine practice with us to give every patient who has undergone a major operation an interstitial injection of saline, Ringer's formula, or a combination of Ringer's saline with a 5 per cent solution of dextrose in equal proportions. The value of this therapy was impressed upon us by its application in Crile's clinic at Cleveland. We also make use of Bartlett's method of adding novocaine solution to the interstitial saline in order to make the administration painless.

The routine giving of 1,000 to 1,500 c.c. of one of the above solutions after each major operation appears to be a method of satisfactorily disposing of the problem of post-operative vomiting. At least, we do not appear to have a more efficient one at the present time. Furthermore, when the patient gets the solutions early, before marked blood changes have taken place, it does not require that

technical knowledge which is necessary for making intravenous therapy safe.

Briefly, the technique of the post-operative interstitial therapy as practised in the Lamont Public Hospital is as follows. As soon as the patient has returned to his bed he is given into the lateral aspects of the thighs 1,000 to 1,500 c.c. of solution, to which has been added 30 c.c. of a 1 per cent solution of novocaine per litre of fluid given. If the needles are inserted so that the solution will run the amount is taken in an hour or less, and is painless then and afterwards. Chemically pure dextrose is used, and the Ringer's tablets are made up for us by Parke, Davis and Company, in such a size that one tablet with sufficient distilled water to make 100 c.c. gives an isotonic solution. The above is a well established treatment in many places over this continent, but it is not used so often as it should be in hospitals where surgical work is done. This technique is more fully described in an article on "Mortality in appendicitis", published in this *Journal*.²

Regarding any treatment which one would wish were universal, three questions are bound to arise. What is its value, what is the risk, and is it difficult to administer?

As to its value, interstitial therapy greatly diminishes post-operative vomiting, lessens nausea to a similar degree, relieves the patient of the intense craving for water, reduces the incidence of post-operative distension, and almost does away with the need of catheterization. In addition, it supplies the drained tissues with fluid, and makes up for that which has been lost during the operation.

A small series of non-operative patients and a similar series of operative patients were given the same amount of fluid from seven o'clock in the morning to seven o'clock in the evening, the former by mouth, the latter by interstitial injection and by mouth if they wished. It is interesting to note that the operative cases

* Read before the Alberta Medical Association, Edmonton, September, 1928.

retained from 200 to 500 cc more of the fluid during this twelve hours than did the non-operative. Might it be suggested that these patients need this amount of water, and if they do not get it by interstitial injection there is no other certain way of giving it whereby one is sure that it will be retained except by the intravenous route?

Lahey³ and Crile and Higgins⁴ stress the need of fluid in the operative patient. The giving of fluids by means of the Murphy drip, though excellent in many cases, very often fails in that case in which it should function, and the very sick patient expels his drip, thereby receiving no benefit. It is in this type of case that the interstitial form of administration demonstrates its usefulness.

There appears to be no risk if ordinary care is observed and asepsis employed. It is hardly necessary to add that the solutions ought to be of the proper strength, temperature, etc. In 1,200 cases in our hospital in which this procedure was adopted we have had three local infections, each one following the addition of a new interne to the staff, suggesting a slip in

technique. There have been no other complications. Considering the immense amount of relief afforded to the patient even the above unfortunate occurrences hardly constitute a risk.

The giving of the interstitial injection, as every one knows, is a simple procedure. A nurse may give it, but we prefer a doctor to take the responsibility. The use of the novocaine makes it possible to give an interstitial injection at any time without any discomfort to the patient and it is often used apart from operations when a patient needs fluids urgently.

In view of our experience with this number of cases, the pleasing results, and the relief to each patient, we would recommend the adoption of this interstitial therapy for all major operations, as a measure adopted in the best interests of that uncomfortable individual, the post-operative patient.

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AN UNUSUAL CASE OF DIABETES AND GOUT*

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THIS case of gout and diabetes is reported because of (a) the debatable causal relationship between gout and diabetes, (b) the anomalous influence of the insulin administered upon the course of the gout, and (c) the results of synthalin treatment.

A male, (Hospital No. 1128-27), aged 50 years, was admitted to the Montreal General Hospital, March 2nd, with a history of "thirst, dry mouth, frequent urination and weakness."

He was born in Montreal, had measles and diphtheria in childhood, pneumonia in 1915 and typhoid fever in 1917. He stated that for the last ten years he had been suffering from gout, and during that period had been confined to bed at least five or six times a year. The duration of these attacks varied between two and ten days. At each attack potassium iodine and

colchicum or atophan treatment resulted in relief. He had been accustomed to drinking about two or three pints of stout each day.

There was no family history of diabetes. His father also suffered from gout and died at the age of sixty-nine from "anæmia," and one brother, who is alive and otherwise well, has frequent attacks of gout.

The history dated back to February 15, 1927. At that time he was free from any attacks of gout for about one year and, for the first time, noticed excessive thirst, and his mouth "became very dry." Accompanying this thirst there was increased frequency of urination. He stated, however, that, though his appetite was always good, he believed it had increased a few weeks prior to the onset of the thirst. He also said that for three months prior to February he did not feel as strong as usual.

That the diabetes dated farther back than the

*From the Department of Metabolism, The Montreal General Hospital, Montreal.

above history indicates is suggested from the laboratory findings of February, 1926. At that time he received hospital treatment for an attack of gout, and the laboratory records show a fasting blood sugar of 0.13 per cent. The urine contained no sugar. There is nothing in the records to suggest that the mild hyperglycæmia might have been due to defective kidney excretion. The urine contained no albumen, the blood urea nitrogen was 18.5 mgm per 100 c.c., and the creatinine was 1.4 mgm per 100 c.c. At that date there were no other clinical conditions to account for the hyperglycæmia. On February 28, 1927 he consulted Dr. D. Grant Campbell, who during his routine examination discovered sugar and acetone in the urine and advised hospital treatment.

Briefly, the findings of the physical examination on admission, were as follows. There was slight emaciation and an acetone odour to the breath. The lungs were negative. There was a slight degree of hypertension (140/82), and cardiac hypertrophy. The transverse dullness of the heart extended from a point 1 cm. to the right of the mid-sternal line to 10.5 cm. to the left of the same, at the level of the third rib. Both patellar reflexes were absent, the other reflexes were normal.

Both hands showed enlarged interphalangeal joints and the great toe of the left foot was markedly enlarged. There was also some deformity of all of the metatarso-phalangeal joints of the same foot.

The following were the results of the routine laboratory tests —

The urine was clear and pale, specific gravity, 1.036, reaction acid, sugar, plus, acetone and diacetic acid, plus, albumen, a trace, a few hyaline casts were present. The blood red cell count, 4,210,000 per c.mm., white cell count, 8,100 per c.mm., hæmoglobin, 82 per cent, urea nitrogen, 21 mgm per 100 c.c., creatinine, 1.45 mgm per 100 c.c., uric acid, 9.10 mgm per 100 c.c.

On March 3rd, in the fasting state, the blood sugar was 0.277 per cent and the plasma cholesterol was 0.284 per cent. The twelve-hour specimen of urine (8 p.m. to 8 a.m.) showed a volume of 1250 c.c. and contained 15 gm. of sugar. Both acetone and diacetic acid were present, and the total acids corresponded to 820 c.c. of deci-normal (titratable acid plus ammonia).

PROGRESS

In spite of a diet much below the caloric requirements, the urine still contained sugar and acetone bodies five days after the patient's

admission to the hospital, though the blood sugar had fallen from 0.277 per cent to 0.175 per cent. Insulin treatment was then commenced. On March 7, he was given ten units of insulin and the following day the urine was free of sugar and the amount of acetone bodies had decreased. The next day (March 9), the blood sugar was 0.147 per cent.

On March 10, the patient complained of a sharp pain in the left foot, involving the great toe and metatarsal region. The toe was then found to be red, hot and tender, with the typical gouty appearance. At that time he attributed the attack of gout to the insulin. Little attention was, however, paid to this possibility at the time. He was given atophan treatment, and by March 19 all acute signs, both subjective and objective, had disappeared, with the exception of "a little pain in the toe." With the attack of gout there was some disturbance in the course of the diabetes, in that glycosuria and acetonuria reappeared, and it was necessary to increase the dose of insulin to thirty-five units. Twenty units were given in the morning before breakfast, and fifteen in the evening before dinner. In a short time, however, with the disappearance of the acute symptoms of the gout, it was possible to reduce the dose and, on discharge from the hospital, on March 26, the urine was free of sugar and contained no acetone bodies. The blood sugar was normal (0.118 per cent). The plasma cholesterol was 0.194 per cent and the uric acid was 3.63 mgm per 100 c.c. of blood. He was then tolerating a diet of 50 gm. of carbohydrates, 150 gm. of fat, and 50 gm. of protein on fifteen units of insulin a day, taking ten in the morning and five in the evening. He weighed 126 lbs. There was still some pain in the affected toe. At that time the patient, a very intelligent individual, remarked that this was the first attack during which the pain had continued for so long a time.

He was again seen on April 27, and gave the following history* —

Until April 21, he took the same doses of insulin as on discharge from the hospital, namely, ten units in the morning and five at night, *but not daily*. The pain in the toe had not disappeared and, since the progress of the gout differed from all previous attacks, he again considered the possibility that it was due to the insulin. Insulin was, therefore, discontinued about three days a

*Importance was attached to this history because of the intellectual capacity of the patient, his knowledge of his diet, and recognition of the part that it played in the control of his diabetes, and his co-operation.

week He then noticed on the days that he was receiving no insulin, he was free of pain In order, however, to keep the urine sugar free he, without instructions, reduced his diet, and was living on approximately 25 gm of carbohydrates, 80 gm of fat and 30 gm of protein per day

On April 27, the urine was sugar free and contained no acetone bodies The blood sugar was on the border-line of hyperglycæmia, namely, 0.128 per cent The cholesterol was 0.250 per cent and the uric acid was 7.50 mgm per 100 c c

Since his discharge from the hospital (March 26), colchicum and atophan both were of little

value in controlling the residual pain His weight was now 116 lb On the low caloric diet he lost 10 lb On April 29 his diet was increased and it was suggested to him that he take small doses (5 units) of insulin daily With this the pain became very acute the following day Insulin was then discontinued In order, then, to keep the urine sugar-free, he was given the dietary treatment of pre-insulin days that is one in which both the carbohydrate and caloric contents were gradually increased Notes of farther progress are recorded in the accompanying table

TABLE

Date	Blood Sugar Per Cent	Urine Sugar	Urine Acetone	Plasma Cholesterol	Blood Uric Acid mgm per 100 c c	Remarks
Mar 26, 1927	0.118	0	0	0.194	3.63	Discharged from hospital Diet C=50 F=150, P=50 Weight=126 Insulin, 10-0-5
Apr 27,	0.128	0	tr	0.250	7.50	Diet C=25, F=80, P=30 Weight, 116.0 No insulin
May 5,	0.111	0	—		6.66	Weight, 118.8 No insulin
May 14,	0.098	0	+	0.262	5.71	Weight, 117.7 No insulin
May 15,						Diet C=50, F=150, P=50
May 21,	0.166	0	tr		5.92	Weight, 117.7 No insulin
June 4	0.186	0	tr		5.42	Weight, 116.6 No insulin
June 5						To take 25 mgm synthalin every second day
June 11,	0.140	0	0		4.63	Had diarrhoea and cramps during week van den Bergh=negative Urobilinogen less than one in ten dilution
June 18	0.129	0	0		5.74	No cramps all week Weight 118.8
June 25,	0.125	0	0	0.333	4.90	No cramps all week Weight, 119.0
July 15	0.135	0	0	0.286		
Aug 13,	0.111	0	0	0.250	9.30	
Sept 10,	0.145	0	0	0.333	10.00	No supply of synthalin since Sept 9, 1927 Weight, 121.8
Oct 1,	0.108	0	0		8.08	Synthalin since Sept 11 1927 Weight 121.0
Nov 5,	0.143	0	0	0.285	6.32	No supply of synthalin since Oct 30 1927 Weight, 121.0
Nov 26	0.178	0	0		7.84	Synthalin since Nov 6 1927 Suggestion of gout Weight 123.0
Dec 31,	0.200	tr	0	0.300	6.82	No synthalin since Dec 24, 1927.
Jan 14, 1928	0.143	0	0	0.333	7.14	Neosynthalin 10 mgm daily since Jan 1, 1928 Weight 125.4
Feb 4,	0.119	0	0		6.15	Weight, 124.5
Mar 10,	0.140	0	0	0.350		Weight, 124
Apr 21,	0.108	0	0			Weight, 125½
July 21	0.133	0	0	0.325	8.00	Weight 120
Sept 1,	0.119	0	0	0.333	6.65	Weight, 120

It will be seen that on May 5 the urine was sugar-free, but contained traces of acetone bodies and the blood sugar was normal (0.111 per cent). The uric acid was 6.66 mgm per 100 c.c. He was seen again on May 14 and, at that time, conditions were practically the same as those on May 5. The blood sugar was 0.098 per cent. His weight, however, was only 117 lb. and, though he was free of gouty pains, he had the appearance of a diabetic of the pre-insulin days. The plasma cholesterol was 0.262 per cent.

Since the blood sugar was normal, he was given a diet consisting of 50 gm. of carbohydrates, 150 gm. of fat and 50 gm. of protein. This was consistent with his requirements. One week later, on May 21, though the urine was still sugar-free the blood sugar was 0.166 per cent. The rise in the blood sugar suggested that the diabetes could not be kept in an ideal state of control without insulin. On June 4 this became more apparent, since the blood sugar had risen to 0.186 per cent, though the urine was still sugar-free. The uric acid was 5.42 mgm per 100 c.c. An attempt was then made to use synthalin. The experimental nature, and probable failure, of this treatment was explained to the patient and he offered his co-operation.

He was given 25 mgm of synthalin every second day and on June 11, his weight was 119 lb., and the urine was sugar-free and had remained so all of the previous week. The uric acid was 4.63 mgm per 100 c.c. and the blood sugar was 0.140 per cent. He stated that he had diarrhoea on two occasions during the week and that he had mild cramps. Because of the latter complaints a van den Bergh test was performed on the blood and the urine urobilinogen was estimated. Neither showed evidence of liver damage. He was warned about the possibility of these symptoms, but did not think they were bad enough to discontinue the use of the tablets, because he was "in the hope that they might do good." On June 18, one week later, the blood sugar was 0.129 per cent and the uric acid 5.74 mgm per 100 c.c. He was still taking 25 mgm of synthalin every second day. On June 25, the blood sugar was practically normal (0.125 per cent), the cholesterol was 0.333 per cent, the uric acid was 4.90 mgm per 100 c.c. and the urine was sugar-free. On July 25 and August 13 the blood sugars were 0.135 per cent and 0.111 per cent, respectively, and there was nothing relevant to report during these visits. It will be noted that the plasma cholesterol was high on both occasions.

During the last visit he stated that he had no gastro-intestinal upsets since those complained of on June 11. He returned again on September 10, feeling well and looking well, and stated that he had had no supply of synthalin for the previous day. The urine was sugar-free, but the blood sugar was 0.145 per cent and the plasma cholesterol was 0.333 per cent. At that time he weighed about 122 lb., and stated that he felt better than before he had his diabetes. He was given more synthalin. On October 1, 1927, the blood sugar was 0.108 per cent and the other findings were irrelevant. On November 5, he returned and stated that he had had no synthalin supply since October 30, and he also said that he had not felt so well for five years. The blood sugar at this time was 0.143 per cent. The plasma cholesterol was 0.286 per cent. On December 31, he again returned because he had had no synthalin since December 24. The blood sugar was then 0.200 per cent. He was given neosynthalin and told to take 10 mgm per day, and has done so since. The subsequent findings to date are recorded in the table above. It will be seen that, except on two occasions (January 14 and March 10, 1928), the blood sugars were normal.

It will thus be observed that, for about fifteen months, the diabetes has been kept under control with the use of synthalin. That the synthalin was essential may be observed from the history of the diabetes while he was in the hospital, and the fact that, on the days when he returned for further supplies with a history of having had none for some days previously, the blood sugars had definitely increased.

COMMENT

Of the two other diabetics in our clinic with gout, in one case the diabetes is mild, and in the second case insulin is necessary. In the latter case, insulin, though given in much larger doses, and over longer periods of time, has not precipitated any attacks of gout. This patient, unlike the one described here, has no albuminuria. That insulin was the exciting factor in precipitating the attacks of gout in the case reported appears to be definitely proved, for when it was discontinued the pain would subside, and when it was given the pain reappeared. The explanation of this phenomenon is rather difficult. In view, however, of the observation that insulin produces oedema of the body tissues in some diabetics, and in view of the albuminuria and also of the recent observations of Folin, Berglund

and Derick¹, in their experimental study of gout, it is suggested that the oedema produced by the insulin does not escape the kidneys, and this may be responsible for the attacks of gout

SUMMARY

A case of diabetes and gout is reported. It was found that insulin precipitated attacks of gout. Unfortunately, it was also found that the diabetes was sufficiently severe to require insulin, that without the latter, and on a diet compatible with the normal requirements, it was not possible to keep the urine sugar-free and the blood sugar normal. Because of this, synthalin treatment was attempted. For a very short period the results were discouraging, in that cramps and diarrhoea appeared. At that time, however, there was no evidence of liver damage. The van den Bergh test was negative and there was no excess of urobilinogen in the urine. For this reason, and also because of the patient's co-operation, it was considered advisable to continue the attempt. The results were successful and continue to be so. For more than fifteen months the urine has been kept sugar-free and the blood sugar practically normal without the use of insulin.

A disturbing feature is the persistence of a high plasma cholesterol. It will be noted that, *unlike insulin, synthalin has had no effect on the metabolism of this lipid*. As a matter of fact, the cholesterol is now higher than when the patient was first admitted to the hospital.

That the condition is an anomalous one is suggested from the fact that one other diabetic with gout, who has been receiving much larger doses of insulin, and over a much longer period of time, does not present the same complication. A possible explanation of this condition is suggested.

RELATIONSHIP BETWEEN GOUT AND DIABETES

No definite causal relationship has, as yet, been proved. The literature records opposing views. Von Noorden² believes in a definite relationship between the two diseases and quotes in addition to his own experience those of noted English and French writers. He states, however, that severe gout, that is, with skin and joint changes, is comparatively rare, only twelve cases have been found in a series of 6,000 diabetics. Helmut Seckel³, recording the experience in Umber's clinic, also believes in the association of the two diseases. On the other hand, Joslin⁴, with his large experience, states gout has occurred so

seldom amongst his cases that he attaches little importance to it. Bingham* of Boston writes me that he has not met with a case of gout in his clinic of about 1,000 diabetics. Woodyatt*, Allen* and Campbell* of Toronto, also state they have not met with this phenomenon. In view of the greater incidence of gout in England than on this continent, it is of interest to note that neither Lawrence* nor Harrison* have met with such cases. On the other hand, Graham* has seen two. In our clinic, the case reported here is the third met with. In each the gout was severe. The incidence, therefore, corresponds approximately with that recorded by von Noorden. In the view of the latter, it would appear that there is a causal relationship between the two diseases. It can be shown, by applying calculations based upon the "probability of concurrent events," that there are in our clinic more cases than would be expected from the operation of the laws of chance only. Thus, amongst the last fifty thousand admissions to the Montreal General Hospital, there were twenty-six cases of gout, fourteen hundred and fifty-nine cases of diabetes, and three cases of diabetes and gout combined. Therefore, the probability (p_1) of an individual coming to our hospital having gout was $\frac{26}{50000}$. The probability (p_2) of an individual having diabetes was $\frac{1459}{50000}$. The probable incidence (p_3) of gout and diabetes combined was, therefore, $(p_1 \times p_2) \frac{50,000}{50,000} = 0.75$. Since three of such individuals were found, the incidence was $\frac{3}{0.75}$, or about four times as great as would be expected from the operation of chance only.

Osler's textbook of medicine (10th edition) is noncommittal on this point. The statement is made that "metabolism disturbances in gout may be associated with glycosuria." It will, therefore, be seen that the causal relationship between the two diseases is still debatable.

Grateful acknowledgement is due Dr. D. Grant Campbell for his co-operation and the Eli Lilly Company for the continuous supply of synthalin and neo synthalin *gratis* since it was first prepared.

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*Personal communication

THE SURGICAL GOITRE*

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IN presenting this paper I do not lay claim to any original experimental work, but rather wish to bring to your attention the modern conception of what is called toxic goitre, or hyperthyroidism, laying special stress on its surgical aspect. A great deal has been written during the past few years on this subject, and rightly so, for the treatment of this serious condition has become, or should be by now, fairly well standardized. Most important of all, the preliminary preparations of those that go to operation has of recent times been completely revolutionized, and this, together with the post-operative care, has reduced the mortality rate to within reasonable limits.

The handling of this interesting condition, from the time of the original consultation to the discharge, calls for great patience, sympathy, and understanding. One should take great pains to gain the complete confidence of the patient. A quiet and undisturbed atmosphere is absolutely essential. The patient should have complete confidence that everything is going to come out all right. This state of mind is of course desirable in any pathological condition, but is most essential in hyperthyroidism. To this end there should be the strictest co-operation amongst all those connected with the case. This is particularly desirable at the time of operation. It is not pleasing to see a patient coming into the operating room with those prominent staring eyes, taking in all the details of gowned and masked figures, terrible looking instruments strewn about, and strange objects everywhere, together with a bright and glaring light. It is such a simple thing to cover the eyes and with a few reassuring words convey the patient to a room which is quiet and restful. It only requires a little thought and attention to detail to accomplish this, and the results obtained are gratifying.

Plummer's classification of thyroid enlarge-

ment, in which nine varieties are enumerated, is well known. For practical purposes however Jackson's classification, which follows, is to be preferred.

(1) Colloid goitre, (2) Adenomatous (simple and toxic), sometimes referred to as nodular goitre, (3) Exophthalmic goitre.

As the title of this paper is "The Surgical Goitre" we need spend little time in the discussion of the colloid type. This form of goitre calls for surgery only for the relief of pressure symptoms.

The adenomatous and exophthalmic forms are surgical. The simple adenoma should be operated upon because in about 50 per cent of cases it will become toxic before the age of forty-five. The adenoma with hyperthyroidism demands surgical intervention because of the cardiovascular damage which it causes. In the light of our present knowledge surgical interference offers by far the best results in the treatment of the hyperplastic or exophthalmic goitre. A short discussion of these different types may be of interest.

An adenoma usually develops in a neglected colloid goitre. It is an attempt on the part of the gland to produce an increased amount of thyroxin. The adenomatous goitre is irregularly enlarged.

In the toxic adenoma the onset of symptoms is more gradual and less severe than in exophthalmic goitre. There is usually the history that a goitre has been present for years. The symptoms are nervousness, palpitation, tremor, moist warm skin, and loss of weight which becomes rapid when the hyperthyroidism has become established. Pressure symptoms depend on the size and position of the adenoma. Cardio-vascular derangements are present as a result of the continued toxicity. The heart is usually enlarged. Auricular fibrillation and myocardial degeneration are fairly common. The pulse pressure is increased. The basal metabolic rate is not so high as in

* Presented during the extra mural course conducted recently in British Columbia.

exophthalmic goitre, rarely being above + 60

In contrast to the insidious onset of the toxic adenoma, exophthalmic goitre develops very rapidly. There may or may not be evident enlargement of the thyroid gland. It usually occurs between the ages of 18 and 25 but is by no means limited to these ages. It progresses in waves, with periods of exacerbation and remission of symptoms. These symptoms are tachycardia, nervousness, irritability, emotionalism, exophthalmos, restless movements, fine tremor, heat tolerance, moist skin, and excessive perspiration, dyspnoea, insomnia, loss of strength particularly in the quadriceps, loss of weight, sometimes associated with an increase in appetite. Exophthalmos does not appear at the onset. Gastro-intestinal disturbances do not occur until the disease is well established. Cardiac bruits are frequently present and there is a high pulse pressure. The heart may be enlarged. The basal metabolic rate is usually higher than in toxic adenoma.

On examining suspected cases of hyperthyroidism one must bear in mind that all these symptoms are not present in every case. In one there is increased pulse rate, in another tremor, in another diarrhoea, in another exophthalmos, in another loss of weight. Some show only progressive emaciation. A patient of mine, aged 64 years, with well established toxic adenoma complained only of morning sickness. She would wake up with what she described as a "bilious attack," and was violently ill. Upon examination, however, it was found that there had been a steady and progressive loss of weight, a nervousness extending over some years, an irregular heart, a blood pressure of 170 and 70, and a basal metabolic rate of + 50. Her biliousness stopped, the heart became regular, the blood pressure dropped to 130 to 80 and her weight increased after appropriate surgical treatment.

One might mention here a further class that undoubtedly exists, namely iodine hyperthyroidism. I am convinced that the indiscriminate use of iodine, either as iodized salt or on the prescription of a practising physician, has increased the incidence of hyperthyroidism. This is particularly true of its use in adults above the age of 20. We know that children stand iodine well, and there seems to be evidence that iodine in children will act as

a prophylactic, and possibly will benefit those already showing thyroid enlargement. Its use, however, should be restricted to these two conditions in children, and in adults only as a preparatory measure to operation, and then in the form of Lugol's solution in adequate doses for a limited period of time. We know this, that cases of hyperthyroidism who have had one or more courses of iodine do not respond to this preliminary measure as do those who have never received the drug. Working on the assumption that iodine would change a non-toxic into a toxic adenoma, surgeons were slow to adopt the preliminary iodine treatment in toxic adenomas. At present however practically all goitre clinics are using it in both forms of toxic goitres with, fairly generally, beneficial results. The effect of preliminary iodine administration in hyperthyroidism, particularly exophthalmic goitre, is very startling. The patient becomes more restful, the nervousness diminishes, the pulse rate drops, and the basal metabolic rate comes down, in fact the picture changes completely if only temporarily. We are then not operating on toxic goitres at all, or at least on those showing a much lessened toxicity, and this explains the lowered mortality rate. This clinical change is borne out by the histological picture of the gland removed at operation, the section obtained being one largely of colloid goitre with very little evidence of hyperplasia present.

Since the use of Lugol's solution came in a rapidly decreasing number of thyroid artery ligations are being done. In fact the proper use of iodine has practically eliminated the necessity for ligation. There are exceptional and severe cases of hyperthyroidism, however, which do not respond sufficiently to Lugol's solution, and still require ligation. A ligation tests their ability to stand operation and usually results in a condition of lowered toxicity. In fact, there are cases in which multiple operations are not only justified but necessary, as many as four stages being undertaken. First, one superior thyroid artery is tied, then the other, then a lobectomy is done and finally a second lobectomy. You are all probably familiar with this method, introduced by Crile of Cleveland, and still practised more in his clinic than any other place in the world, but even Crile is finding less reason for this

procedure as time goes on. Let me here pay a tribute to Dr. Cile as the pioneer in the attempt to lower the mortality rate for thyroidectomy. At a time prior to the recognition of the efficacy of Lugol's solution, he noticed the disastrous effects of emotional disturbances such as precede an operation upon a toxic goitre. He was the first to suggest removing these painful stimuli.

The introduction of the basal metabolic test has been of great assistance in the diagnosis of hyperthyroidism, in the selection of the time at which to operate, and in the prognosis of the case. A well established case of toxic goitre is easily diagnosed without such a test, though as a confirmation it should always be done. It is in the earlier cases which do not exhibit a greater number of the typical symptoms that this test is particularly valuable, also as a negative finding in cardiac cases which show a rapid pulse and other signs which might be mistaken for toxic goitre. Again, there is the neurotic case who happens to have an enlargement of the thyroid but who exhibits a normal basal metabolic rate. Such will often be saved an unnecessary operation after this test.

The basal metabolic rate is an index of the rate of oxidation going on in the cells of the body. The test should be made after a night's rest, with no food for twelve hours preceding it. The normal in bed cases varies from -10 to $+10$, and in ambulatory cases from -15 to $+15$. The basal metabolic rate is a fair indication of the toxicity of the condition, remembering that in toxic adenoma the rate is not so high as in exophthalmic goitre. It is of great importance to operate on a falling and not on a rising rate. It is more dangerous to operate on the verge of a crisis with a moderately high rate than on a patient with a high rate who has passed the crisis and is improving clinically. The metabolic rate is not necessarily an index to the ability of the patient to withstand operation, of greater significance is a rapid and recent loss of weight, together with a high pulse pressure.

In the June issue of the *Archives of Internal Medicine* an article appears by Segal, Binswanger and Strouse of Chicago on the effect of emotion on basal metabolism. The summary of the paper is as follows:

"1. The effects of the thought of impending operation on basal metabolic rate, blood pressure

and pulse rate were studied in three groups of cases

(a) A constant effect on the rate of metabolism was not seen in group 1, which consisted of patients of various types of nervous stability with a normal rate of metabolism.

(b) In group 2, which was made up of patients with hyperthyroidism who had received iodine according to the present day pre-operative routine, a marked rise in metabolic rate did not occur the day of operation.

(c) Group 3 was comprised of persons with hyperthyroidism who had not had iodine, as in group 2. In these patients a marked rise in the basal metabolic rate resulted the morning of supposed operation.

2. A practical point for consideration is the possibility of using the foregoing procedure as an index of complete or incomplete iodization. A rise of the metabolic rate the morning of operation might indicate that an insufficient amount of iodine had been given."

We have always been sure of the results of preliminary iodine medication but this is the first attempt, to my knowledge, at proving this by experimentation.

PRE-OPERATIVE PREPARATION

Remembering that in toxic goitres there is a burning up of body tissue, which is exemplified frequently by a rapid loss of weight notwithstanding a hearty appetite, it is important that a high caloric diet be instituted, this diet to be particularly rich in carbohydrates. In addition, a large quantity of fluids is administered, and with this a goodly supply of glucose. Rest is absolutely essential and this must be induced by some narcotic. As a preliminary to operation I employ the following régime:

A variable length of time in bed, depending on the extent of the toxicity, is prescribed before the actual preparation for operation. This is as follows:

1. Absolute rest in bed in hospital, preferably in a private room from which visitors are rigorously excluded. During the morning and afternoon the patient is encouraged to sleep by darkening the room and placing a cloth over the eyes. At this point it may be well to repeat the necessity for all the attendants, including the attending medical man, to use the utmost tact and to radiate confidence.

2 At least 100 ounces of fluids in 24 hours Orangeade, sweetened with glucose, between meals

3 A high caloric diet, low in protein, but rich in carbohydrates

4 Lugol's solution, ten to fifteen minims three times a day in one ounce of grape juice or cream

5 Luminal one and a half grams night and morning for the first few days, then at night only, bromides in addition if necessary

6 Ice cap to heart

Digitalis is not used unless there are signs of decompensation or auricular fibrillation present, then thirty minims are given every two hours for six doses. In a few days there will usually be a decided clinical improvement, as shown by a lessened nervousness and a lowered pulse rate. This will be demonstrated by an improved basal metabolic reading. This preparation is continued for a period varying from six to fourteen days.

Early on the morning of operation 100 gm of glucose are given in orange juice, and also 20 to 30 minims of Lugol's solution. Three quarters of an hour previous to the operation hyoscine 1/150 gr is given hypodermically, followed in one half hour by morphine gr 1/6 and atropin gr 1/50. This preparation usually assures a moderately calm patient for operation and one who shows very little change in pulse rate during the procedure.

A good deal has been written about the wisdom or otherwise of telling these patients when the operation is to occur. I do not have any hard and fast rule in this regard. Each case must be considered on its merits. Some go into hospital with the understanding that in about a week's time they will be operated upon. Some are notified the day previous to operation. I do not see much difference in this respect providing the pre-operative preparation has been adequate.

OPERATION

Thyroidectomy may be done under local anaesthesia, general anaesthesia, or a combination of both, of the latter, one may employ local anaesthesia up to the point of actual resection of the gland, and then general, or general during the whole procedure augmented by local. As we know, inhalation anaesthetics cause suboxidation, so that deep anaesthesia is

absolutely contraindicated, and this applies particularly to ether. After a little experience in all these different methods I prefer the combination of light nitrous oxide and oxygen, together with local by the infiltration method.

As local anaesthesia appears in all these methods, with the exception of one, it is well to discuss it in detail. The skin of the neck is prepared with alcohol, or mercuriochrome 2 per cent. Novocaine, without adrenalin, $\frac{1}{2}$ to $\frac{3}{4}$ of 1 per cent is injected with a long needle along the line of incision through one needle puncture. Through this same puncture the whole of the anterior aspect of the neck well beyond the sternomastoid muscles is also injected, taking care to keep the needle constantly in motion. This requires a good deal of solution, about 200 cc may be necessary for the superficial and deep injection. The incision is then made and the flaps dissected above and below, being sure to get adequate exposure. The fascia and muscles are then injected on either side of the mid line through about three punctures. These are then incised in the mid line downwards and this incision should extend from the thyroid cartilage to the sternum. The sternothyroid and sternohyoid muscles are then separated and the muscles of the right side retracted by an assistant. The capsule of the right lobe is then injected with novocain. This not only acts as an anaesthetic but lifts the capsule from the gland and facilitates dissection. When the capsule is incised and separated the gland is then injected both in its upper and lower poles. Resection of the lobe is now commenced. A similar course is followed on the left side. While novocain injection may add a few moments to the operation this objection is far outweighed by the lessening of the depth of general anaesthesia and the way in which dissection is facilitated.

Of course, bilateral resection is the universal operation to-day, except where there is a single adenoma. One gets very few recurrences if the greater bulk of both lobes is removed. My practice is to try to leave just a slice of thyroid tissue with the posterior capsule. By the resection method it is not necessary to isolate the superior thyroid arteries, as was the custom in the old days, but a portion of the superior pole is clamped and

tied with these vessels. As there are a great number of clamps used in the resection operation a great deal of tying is necessary, and woe betide the operator who is careless in this regard. After all bleeding points are secured the different layers are sutured separately and a soft rubber drain left in for twenty-four hours. During the operation the patient receives physiological saline interstitially, and before leaving the operating room is given morphine gr 1/6.

On returning to the ward she is immediately given by the rectum 6 oz of saline containing 10 per cent glucose and 30 to 40 mm of Lugol's solution. The saline without Lugol's is repeated every four hours, and ten minims of Lugol's solution are given by the mouth three times a day for three days. It is very necessary that these patients be kept quiet, so that morphine is used liberally gr 1/6 q 2 h if required.

On the second day 2,500 to 3,000 cc of fluids should be ingested. The drain is removed in twenty-four hours after operation, and the skin sutures on the third or fourth day.

If the pre-operative and post-operative routine I have outlined is followed there is very moderate reaction and the patient is usually allowed to get up about the sixth day.

Those cases of acute post-operative hyperthyroidism which were formerly so dreaded are practically unknown since iodine has been used as a preliminary preparation and for seventy-two hours following operation. If during the operation there is evidence of considerable reaction, which is best exhibited by a rapidly increasing pulse rate, the wisest course is to stop, pack, and finish the job later on.

In addition to the above possibility other post-operative complications may occur such as hæmorrhage, post operative tetany, or hypothyroidism. Pressure and ice caps will help to control oozing. Hæmoplastin may be given with advantage, or it may even be necessary to open the flaps and secure bleeding points. Mild post-operative tetany will be controlled by calcium lactate by mouth or subcutaneously, or if these fail, by parathyroid extract subcutaneously.

A mild hypothyroidism may follow a very radical operation. Unless all the gland has been removed this is usually controlled by small doses of thyroid extract, which usually need not be continued for long.

In the resection operation injury to the recurrent laryngeal nerves should be a very rare occurrence. Injury to one nerve is not very serious, but injury to both nerves is a catastrophe and calls for immediate tracheotomy.

SUMMARY

I have endeavoured in this short paper to emphasize a few points which seem to be of paramount importance in the successful treatment of hyperthyroidism and in summary would mention

- 1 The importance of gaining and holding the confidence of the patient
- 2 The necessity for exclusion of all irritating and exciting influences
- 3 The absolute indication for an adequate and careful preliminary preparation
- 4 The desirability of guarding against sub-oxidation by using light anaesthesia
- 5 The importance of removing an adequate amount of thyroid tissue

Case of Magnesium Sulphate Poisoning—Harvey S Thatcher reports the case of an American farmer, aged 26, poorly nourished, who had a provisional diagnosis of psychoneurosis of the neurasthenic type. At 6 a.m. he was evidently accidentally given a dose of magnesium sulphate. He was found dead at 7.10 a.m. Approximately 1 litre of yellowish brown fluid was present in the stomach and a dark red and hæmorrhagic appearance of the lining of the stomach and small intestine, and considerable blood was mixed with the contents. The chemist reported 883½ grains (57 grm) of magnesium sulphate in the contents of the stomach.

As the dosage is 240 grains (15.5 grm) the amount recovered was more than three times the required dose. The case reported illustrates that more care should be exercised in the administration of magnesium sulphate. Toxicity may result without death. An idiosyncrasy may exist and the average dose may be toxic. If toxicity does occur after its use, the treatment consists of the subcutaneous or intravenous administration of calcium salts, according to Meltzer and Auer. There is an antagonistic action of calcium on the inhibitory effect of magnesium.—*J Am M Ass*, 1928, xci, 1185

DISSEMINATION OF THE BROAD TAPEWORM BY WILD CARNIVORA*

BY TEUNIS VERGEER

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IN a paper to appear in the *Journal of the American Medical Association* I have pointed out that the dog in the northern lake regions of Alberta, Manitoba, and Ontario is an important reservoir of the broad tapeworm of man. There the wall-eye and great northern pike, *Stizostedion vitreum* Mitch and *Esox lucius* L, respectively, are infested with broad tapeworm larvae and are fed raw to dogs. The dogs live at or near water, so that the eggs of the adult broad tapeworms, *Diphyllobothrium latum* L, with which they are infested, readily get into the lakes and streams and make possible the reinfestation of the fish. Since numerous experiments have proved that dogs very easily acquire broad tapeworm infestations,¹ it is probable that the early reports² of broad tapeworm from dogs were actually correct, and it is possible that the immature *D. americanum* reported from a dog in Detroit by Hall³ is *D. latum*.

In a paper appearing in the *Journal of Infectious Diseases* I have called attention to the possibility that some wild carnivores might also serve as carriers of the broad tapeworm of man and might constitute a factor in the maintenance of infestations in fish capable of harbouring the larvae. Warthin⁴ reported a broad tapeworm from a wild fox, probably *Vulpes fulvus* (Desmarest), from northern Michigan, and, since in general the parasites which infest the dogs also infest foxes, foxes in endemic areas must therefore be considered as factors in the dissemination of this tapeworm. That the grey wolf,⁵ *Canis occidentalis* Richardson, and the coyote,⁶ *Canis latrans* Say, are known to feed on fish is reported by Ernest Thompson Seton in his most interesting and detailed work on the life histories of northern animals. One grey wolf

was reported to have taken fish from a fisherman's net while set through the ice. Since wolves and coyotes are common in the endemic regions of Canada it is obvious that they must also aid in the maintenance of the infestations with *D. latum*. German workers have reported broad tapeworm from cats⁷ and I have experimentally infested one domestic cat with a broad tapeworm.⁸ It is well known that cats like fish, and in infested areas domestic cats doubtless have broad tapeworm.

Since the lynx, or bob-cat, *Lynx canadensis* Kerr belongs to the same family as the domestic cat and is much larger, it is only reasonable to assume that the broad tapeworm can develop in its intestine. The lynx feeds mostly on small mammals and birds, varying its diet from time to time with fish⁹ and frogs. It likes water and will voluntarily swim distances of two miles.¹⁰ The lynx is common in infested areas in Canada and occurs in northern Minnesota and Michigan. It seems entirely probable that this animal occasionally harbours broad tapeworm and, because it often lives near water, may thus aid in the maintenance of the infestation in fish. Whether mink, martin, raccoon, fisher, and otter, all of which subsist wholly or partly on fish, are capable of becoming infested with broad tapeworm is not known. Since in cats the broad tapeworm is smaller than in other known hosts, and in dogs it is always smaller than in man, it seems that small size of the host may be a factor limiting the development of this tapeworm. The mink and martin are smaller than the house cat. Therefore it is difficult to believe that they can harbor *D. latum*. The fisher, otter, and raccoon are all larger than the cat, and experiments might show that they can serve as hosts of *D. latum*. However, none of these seem to be abundant in endemic areas, either in Canada or in the United States, while foxes, coyotes, wolves, and lynxes are rather

* Contribution from the Department of Zoology, University of Michigan. One of a series of investigations carried on under grant 131, awarded by the American Medical Association to Professors George R. La Rue and A. S. Warthin of the University of Michigan, under the former of whom the work has been conducted and to whom I here express my grateful appreciation.

common in Canada and not rare in upper Michigan and Minnesota

The largest carnivore in America is the bear. It is not closely related to either the cat or the dog family. In its food habits it more closely resembles man than either the dog or the cat, since it eats berries, roots, and herbs in addition to animal food. If the broad tapeworm of man can develop in bears, the latter may be capable of harbouring much larger numbers of broad tapeworms of greater size than the mammals before mentioned, because of the diameter of the lumen and the length of their intestines. Unknown adult "bothriocephalid tapeworms" have been collected by Waid¹¹ "from bears in the northwestern United States and in Alaska and the larval stages of these cestodes in salmon in those regions." It is not reported that feeding experiments were performed. Bears have been reported by naturalists to stand in shallow streams and to scoop out fish as they come up to spawn. Such observations are confirmed by woodsmen whom I interviewed last September in the forest region northwest of Lake Superior. Here the wall-eyes and great northern pike crowd up the shallow streams to spawn, and bears by the sweep of a paw throw the fish on land. One man reported to me that he had seen a bear throw out twenty fish before it began to eat them. Seton¹² mentions spawning fish as a regular food supply of bears. It is only while spawning that fish are easily caught by bears. Just at that time all other food is scarce, and it is very possible that not only bears but also other carnivores, driven by hunger, "go fishing" or at least pick up stranded fish. Bears like water and they swim long distances. I have personally found signs of visiting bears on small islands from a half to a mile from shore. There were trees from which bears had pulled the bark and also old stumps and trunks which they had broken in pieces in search of grubs and ants.

Because bears eat considerable quantities of fish, like to be in the water, and live in numbers in areas where I have found the fish infested with larvae of the broad tapeworm, and because they can probably harbour more and larger adult worms than any other mammal in North America, including man, it became a matter of importance to determine whether the bear could

actually and readily become infested with the adult *D. latum*. For this purpose two young bears of the species *Ursus americanus* Pallas were obtained. One was a cinnamon coloured male, the other a black female. Each weighed approximately 100 lb. They had been caught in Canada as "nursing babies" and reared "on the bottle." Immediately after weaning they were shipped to a city in western Michigan where they had since been fed exclusively on bread and milk. Their keeper states positively that they had never tasted fish or meat. Faecal examinations proved that they were free from parasites. Eight plerocercoids which I had taken out of six wall eyes from Thunder Bay, Lake Superior, and had identified as *D. latum* were fed to the cinnamon bear in pieces of muscle of the fish. Uninfested muscle of the same fish was first offered to this bear and he spent considerable time investigating the fish by smelling, pawing, licking, and finally taking it in his mouth. These actions indicated that the bear was not acquainted with fish food. Once having tasted the fish, the bear wanted all he could get. Each of the eight plerocercoids in a separate piece of fish was fed to this cinnamon bear after which he was allowed to eat his breakfast of milk-soaked bread.

For the black bear ten plerocercoids, identified as *D. latum*, were taken out of twenty-five specimens of wall-eyes from Lake Nipigon. Some uninfested pieces of fish from the same lot were offered to the black bear but continually refused, demonstrating that this bear did not know the taste or odour of fish and was not interested. It confirmed the keeper's statement that the bear had never had fish. Beef was offered her afterward and it was also refused. The bear was starved for twenty-one hours, and again fish and meat were offered but refused. Some dry bread was fed to the bear and afterward four plerocercoids, each embedded in a separate piece of milk-soaked bread, were readily taken. Thereupon she received a regular meal of bread and milk. Two hours later another plerocercoid was offered in milk-soaked bread, but the bear was not hungry and refused to take it. Finally, the six available plerocercoids were offered embedded in chocolate cake and no further difficulty was experienced, the bear eating them readily. Faecal samples were taken twenty-three and

twenty-four days after the feeding of plerocercoids. Eggs characteristic of the broad tapeworm of man, *D. latum*, were identified in the faeces of each of the bears and were especially numerous in the faecal material of the black bear. I had previously found in feeding experiments with dogs that plerocercoids did not establish themselves so readily when fed to a hungry animal as when fed about two hours after a meal, and I have obtained 100 per cent infestations by the last procedure. This probably accounts for the especially heavy infestation in the black bear. The infested bears are being kept for further study.

By means of these experiments I have proved that bears readily become infested with the broad tapeworm of man. They also give strength to Ward's¹¹ suggestion that the species from man may be the same as the species of bothriocephalids which he recovered from bears in the northwestern United States and Alaska. In the forested lake regions of Canada I found the plerocercoids of the broad tapeworm of man common in wall-eyes and great northern pike and found that bears were common in the woods. Bears will continue to increase in numbers as long as their skin is of little commercial value. Nowadays trappers feel that there is no profit in taking them. In northern Michigan where fish are infested with broad tapeworm larvae⁵ bears are protected and increasing rapidly, if one can judge by claims for damage to livestock by bears. These claims, according to figures compiled by the state conservation department, amount to \$6006.90 for the fiscal period between July 1927 and July, 1928.

Since bears are common in regions where fish are infected with broad tapeworm larvae and since they eat a great deal of fish during the spawning season, it is evident that bears in these regions must have broad tapeworm. With their excrement they drop large numbers of broad tapeworm eggs daily. Many of these get into the water directly because, as before mentioned, the bear is a lover of water, likes to bathe and swim, and fishes while standing in it. In this manner the eggs hatch readily and eventually the fish in the lakes become re-infested.

From the evidence presented above it is clear

that the infestation of fish with plerocercoids of broad tapeworm is partly beyond control of man. It is virtually impossible to prevent wild carnivores from eating raw fish. The extermination of our wild carnivores to prevent the infestation of fish with plerocercoids of *D. latum* is unthinkable. All of these considerations clearly point to the conclusion that, in order to protect man from the broad tapeworm, it will be necessary to devise adequate means of killing the larvae before fish is eaten, and preferably before the fish reaches the consumer.

SUMMARY

The dog, the fox and the cat are known to serve as hosts of the adult broad tapeworm of man. Because of family relationships it is safe to assume that the wolf, the coyote and the lynx are also capable of serving as hosts. Since all of these eat fish, they in all probability are factors in the dissemination of broad tapeworm in regions where fish are infested with the larvae.

Bears are common in infested territories and catch and eat fish during the spawning seasons. Two bears have been experimentally infested with *D. latum* and thus the bear has been shown to be a very capable host of the broad tapeworm of man. The abundant bears in infested territories must constitute a considerable reservoir of broad tapeworm. Since they like to be in and about water, their egg-laden droppings must cause considerable reinfestation of the fish.

Because wild carnivores disseminate broad tapeworm the infestation of fish with broad tapeworm larvae cannot be completely controlled by man.

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Case Reports

A CASE OF MENINGOCOCCAL SEPTICÆMIA OR SPOTTED FEVER

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A school boy of thirteen years was going about as usual on Saturday morning, June 9, 1928. He went on his bicycle to a store which was three miles away, and after returning took his ordinary mid-day meal. About 2 o'clock in the afternoon he complained to his mother that he felt tired and that his arms and legs were stiff and sore. By 6 o'clock his condition was not improved and he complained further of headache and pains in the back. Later on in the evening he vomited. When some of the members of the family returned from the city, about 10 o'clock, he got up and examined the purchases which had been made. About 12.30 o'clock his condition became so alarming that medical aid was summoned. When seen shortly after 1 o'clock the boy's temperature was 104° , pulse 160, and scarcely perceptible. He died about 5 o'clock, after an illness of fifteen hours' duration. Just before death the pupils became widely dilated, the head somewhat retracted, and there was some stiffness in the limbs. A diagnosis of meningitis was made by the attending physician. No history of any recent illness could be obtained from the parents.

An autopsy was performed while the body was still warm. There were several petechial hæmorrhages into the skin over the legs, arms and face. Similar hæmorrhages were found under the visceral pericardium. The heart was otherwise normal. There were extensive hæmorrhages under the pleura of both lungs. The lung tissue was intensely congested. The spleen was somewhat congested and soft.

The brain and meninges were markedly congested. The spinal fluid was clear. There was no apparent exudate into the subarachnoid space.

Cultures of meningococci were obtained from the base of the brain, the naso-pharynx, the heart's blood, and the spleen. These organisms

were agglutinated by the polyvalent meningococcus serum prepared by the Connaught Laboratories.

The microscopical findings were as follows. Hæmorrhages were present in the pleura. The smaller bronchi were filled with desquamated cells and leucocytes, and amongst these could be seen masses of organisms. Some of these were streptococci, others diplococci with the morphological and staining characters of the meningococcus. The spleen showed congestion, hæmorrhages were present in the pulp, and there were necrotic foci in the Malpighian bodies, but no organisms could be found. The kidneys, liver, and heart showed intense cloudy swelling. The brain showed no evidence of exudate or cellular infiltration of the meninges. The only microscopical change was congestion.

DISCUSSION

This is an example of the septicæmic type of meningococcal infection with only slight involvement of the central nervous system. Wooster-Drought and Kennedy* quote a case in their book on cerebro-spinal fever of a child dying after an illness of thirteen hours only. The fact that no outbreak of this disease had occurred in the district for a considerable time made the diagnosis difficult. The chief diagnostic findings are, the sudden onset of acute symptoms, and the presence of cutaneous hæmorrhages, with or without evidence of meningeal irritation. It is useless to wait for a bacteriological diagnosis before giving serum when the patient presents these symptoms. Experience shows that in these acute cases the intravenous administration of serum is just as necessary as the intrathecal treatment.

Eighty-five persons who had been in contact with this boy were examined in the Richardson Laboratory, and it was found that the father and one of the other children were carriers. In fact, the swabs from the naso-pharynx of the father gave almost pure cultures of the meningococcus. These organisms were agglutinated (1-40) by the Connaught Laboratory serum. The two carriers were treated with serum. It is interesting to note that both

* Cerebro Spinal Fever, Wooster Drought & Kennedy, A. C. Black, Ltd, London, W 1, 1919.

suffered severe serum reactions from the 8th to the 12th days, and that in both cases the organisms rapidly disappeared during this period

A CASE OF CO-EXISTING BENIGN OESOPHAGEAL AND PYLORIC STENOSIS

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The following case has been thought worthy of reporting on account of the rarity of an oesophageal obstruction being associated with a pyloric stenosis, furthermore the oesophageal obstruction is of interest from an etiological standpoint, the common causes being here excluded

CASE REPORT

Present Illness—Mrs W. Y., aged 40, Canadian housewife, came into the office on November 14, 1927, complaining of loss of weight and attacks of vomiting. Previous to Christmas, 1926, the patient had been in fairly good health, though always troubled more or less with "indigestion". At this time she began to have water-brash and a sense of fullness in the epigastrium, with occasional attacks of vomiting which usually came on one or two hours after meals. The vomiting was not associated with pain. These symptoms persisted to some extent until June, 1927, when her vomiting became more persistent and was of a projectile type, but as before was not associated with nausea or pain. Her weight up to this time had remained constant at about 130 lb. As the vomiting became more severe, the vomitus assumed a black appearance, and her physician found that there was blood in the stool. In August she began to experience a slight difficulty in swallowing and the vomiting occurred almost immediately after meals.

The patient was admitted to hospital at this time, where she remained for three months under her physician's care. No barium series was done, the case being considered an inoperable carcinoma of the stomach. During this period she lost weight rapidly and her vomiting was not controlled. Her weight on discharge in August was 80 lb., and she was given to understand that her prognosis was hopeless. The patient found that she could retain small amounts of fluid if

taken at frequent intervals, but could not take solids as they were almost immediately regurgitated. On a strictly fluid diet her vomiting stopped and her weight slightly increased. For the next month the patient remained fairly comfortable, but she was unable to change her fluid regime, even semi-solids initiating vomiting. The difficulty in swallowing had increased. From October until seen by us in November she had not vomited, but was beginning to lose weight again. When seen on November 14th, 1927, her weight was 81 lb., and she was cachectic in appearance and very weak.

Past History—On close questioning, the patient gave a typical history of a peptic ulcer which had its origin about twenty years ago. The history was disconnected but definite. She stated that five years ago her pain following meals disappeared and she remained in good health until the beginning of the present illness. She had had influenza in 1926.

The *Family History* was unimportant.

Physical Examination—An emaciated cachectic-appearing woman of about middle life. Apart from her abdomen the physical examination was negative, except for a fairly large non-toxic adenoma of her thyroid.

The abdomen appeared full, the skin inelastic and dry. A fluid wave could be elicited across the whole abdomen, with a definite splash most marked in the region of the umbilicus. Resonance was normal in the loins. There was no rigidity and no palpable mass, but a tender point was present in the region of the pylorus. The liver, spleen, and kidneys were not palpable. Rectal and pelvic examinations were negative.

Laboratory Findings—Red blood cells, 2,500,000 per cmm. Haemoglobin was 45 per cent. The smear showed the picture of a secondary anaemia. Urinalysis, negative. A subsequent stomach analysis showed no free acid. A barium series revealed a very large atonic stomach with the lesser curvature at the level of the iliac crests (See Fig. 1), with an almost complete pyloric stenosis. Malignancy was considered but was excluded on account of the appearance of the x-ray.

The patient was admitted to hospital on November 16, 1927. A Rehfuß tube was passed and an unsuccessful attempt was made to aspirate the stomach contents. A considerable amount of water was injected through the tube, but only a small part of it could be recovered. The question of an oesophageal occlusion was then

considered and the fluoroscope revealed the fact that the Rehfuß tube lodged about $1\frac{1}{2}$ inches above the diaphragm. A heavy barium paste was then given and showed that the oesophagus filled up to this point, the lower margin of the barium was cone-shaped (a rather long pointed cone), but below this a very narrow shadow of barium was seen, extending downward into the stomach, the calibre of the shadow being little more than that of a knitting needle. The exact nature of this blockage was not obvious at this time. (See Fig 2)

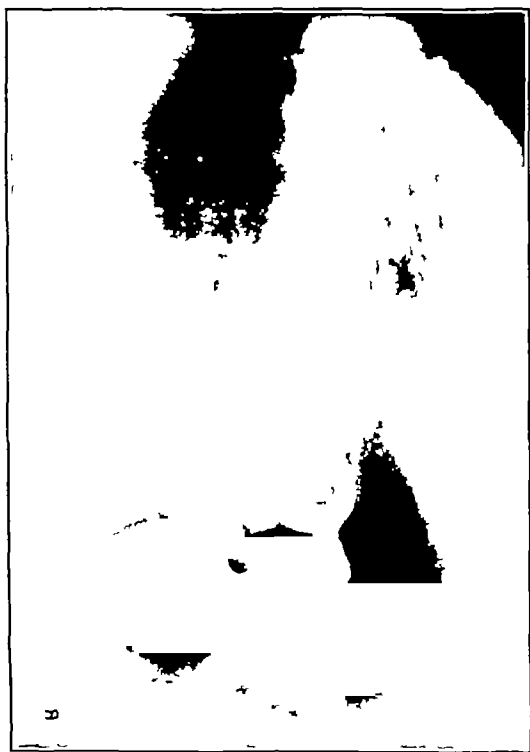


FIG 1—Pyloric stenosis. Extreme ptosis of the stomach, the lesser curvature being on a level with the iliac crest

It was apparent that there was an obstruction practically occluding both ends of the stomach, a pyloric stenosis, certainly benign, due to a healed pyloric ulcer, and an oesophageal stenosis of unknown origin.

The first problem was obviously the oesophageal stricture, and with this in view Dr F W Brydone-Jack was asked to do an oesophagoscopy. This, performed under local anaesthesia, on November 23rd, 1927, revealed a stricture of the oesophagus, with no ulceration and no hyperkeratosis of the oesophageal mucous membrane. A dilatation of the stricture was partially accomplished at the first attempt, and a gum-elastic feeding tube was inserted into the stomach. The

stricture involved about three inches of the oesophagus. The stomach was then aspirated and for the following week the patient was kept on a high caloric fluid diet injected through the tube, with a nightly aspiration of the stomach. Intravenous glucose and hyperdermoclysis were also used. At the conclusion of the week the patient had gained $9\frac{3}{4}$ lb, a great deal of which, of course, was due to her increased fluid intake. Her general appearance, however, was very much improved.

On November 30th a second dilatation was done and a Rehfuß tube was passed into the



FIG 2—Oesophageal obstruction involving the lower three inches of the oesophagus

stomach. Following this the patient was able to swallow fluids, and, with a nightly aspiration, she was kept fairly comfortable. The aspiration was made necessary by the atony of the gastric wall, resulting from the overdistension caused by the weight of the fluid which had remained so long in the stomach, this could neither pass down, nor could it be vomited up, owing to the pyloric stenosis on the one hand and the oesophageal occlusion on the other. The patient was discharged on December 2nd, 1927, weighing 95 lb, a further gain of four lb.

On December 5th the patient reported to the office, feeling much stronger. Dr Brydone-Jack again passed an oesophageal No 14 bougie, and found that the stricture had shown no

tendency to recur. The patient was kept under observation for the next month and her general condition rapidly improved. The diet consisted mainly of fluids of a high caloric value, and the tone of her gastric musculature was rapidly recovering, as visualized under the fluoroscope. The gain in average weekly weight was about four pounds, and on February 6th her weight was 118 lb., and she felt in better health than she had for years.

She had now gained enough strength to permit of a posterior gastroenterostomy being done.

Exploration revealed a stomach of fairly normal tone, with the scar of a healed ulcer on the pyloric ring. The stenosis was almost complete. In view of the possibility of the œsophageal stricture recurring, the transverse mesocolon was sutured well back from the stoma on the posterior gastric wall, so that if a hypertonicity resulted there would be no obstruction to the stoma by its being drawn up into the lesser sac. Recovery from the operation was uneventful and the patient was discharged three weeks later. On September 10, 1928, she reported in excellent health, she had no gastric symptoms and was able to take an ample controlled diet.

COMMENT

This case should impress on our minds two essential points: first, the necessity of a routine fluoroscopic examination of the œsophagus in all cases in which a barium series is being done, and, secondly, the importance of a careful history-taking. In reporting this case we are holding no brief for ourselves in the fact that a complete clinical diagnosis was not made. In retrospect one can easily follow the course of this woman's history, beginning twenty years ago with a peptic ulcer, through fifteen years of a fairly typical history, the development of a pyloric stenosis with its attending emesis, the development of an œsophageal stricture, which first interfered with swallowing, then later caused a different type of vomiting from that which previously had been present, and finally the inability to vomit gastric contents due to the stenosis.

Having excluded carcinoma and cardiospasm, both on the evidence of the x-ray pictures and of the œsophagoscopy, one is at a loss to explain this type of benign stricture. It did not have the appearance of a hyperkeratosis, such as was indicated in the cases recently reported by Dr. F. N. G. Starr, of Toronto, nor did it have

the appearance of a stricture resulting from one of the common poisons.

Another point that might be emphasized is the importance of giving a patient the advantage of all modern facilities, especially the x-ray, and, in this type of case the œsophagoscope. We were able by these means to give a good prognosis in a case which appeared from the clinical point of view to be hopeless. Even an exploratory laparotomy should be done before considering a case as being beyond hope.

TWO CASES OF CANCER OF THE LUNG*

By THE MEDICAL STAFF OF THE MOUNTAIN
SANATORIUM,

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CASE 1

The clinically remarkable features of this case are the long duration of the illness, the lack of symptoms other than hæmorrhage, the afebrile course of the disease, and the relative obesity of the patient. The pathologically remarkable features are the presence of spontaneous pneumothorax, the occurrence of atelectasis, the relatively benign character of the tumour, and the presence of bronchiectasis distal to the tumour.

History of Illness.—Mrs. J. W., 43 years of age, with five healthy children, no occupation other than her home. There was no history of exposure to tuberculosis nor of cancer in the family. She insisted that she had had no previous illnesses and had always been strong and healthy. Her final illness began about six years before death with an attack of pain in the left side of the chest, with cough and sputum, and a hæmoptysis of moderate amount. She remained in bed only a few days, and stated that she had night sweats with fever at this time for two or three weeks. About three weeks later, she had a second hæmoptysis amounting to half a cupful and a year later three of like size. From this time on the hæmorrhages increased in frequency but her general condition remained good. She felt well and continued at work. In March, 1927, hæmoptyses occurred almost daily and averaged about two ounces in amount. She came to the Mountain Sanatorium on April 12, 1927, and remained until June 4, 1927. While there her

* Reported by Dr. T. G. Heaton.

illness remained afebrile and she had no cough or sputum. She went home on light exercise and was re-admitted on October 31, 1927, following several hæmoptyses. She was kept in bed and remained free of hæmoptysis after this until February 9th, 1928. During this admission also her illness was afebrile. She had occasional morning cough with a little sputum, and complained of no other symptoms. On February 9th the hæmoptyses became frequent and severe. On February 14th, an attempt was made to control them by artificial pneumothorax. The right pleural cavity was entered in several places but manometer readings of minus 40 to plus 60 were obtained. No air was put in. Next day an x-ray of the chest confirmed the diagnosis of right-sided pneumothorax. There was no loss of weight at any time during her illness and she remained moderately obese.

On February 16th, the patient died of hæmorrhage with aspiration of blood.

Physical Examination — The patient was cyanosed for several days after her second admission. When this cleared up, her appearance was healthy. The chest showed slight impairment of resonance at the right base anteriorly and posteriorly. Medium and coarse râles were heard at the left base on admission. These persisted.

The first x-ray examination was made by Dr L. R. Hess in March, 1927, and his report at that time read in part as follows:

"This film shows the characteristic partial collapse of the right lung with elevation of the diaphragm, retraction of the heart and mediastinal contents and deviation of the trachea to the right due to a foreign body, (aspirated blood) in the bronchus."

Second films were taken at the Mountain Sanatorium on April 12, 1927, and showed less contraction of the lung field on the right side than those taken in March. This report read as follows:

"The left dome of the diaphragm is normal, the angles are clear. The left cardiac border is more oblique than usual. The right cardiac border is not clear. There is an irregular triangular-shaped area of homogeneous shadowing filling in the angle between the right dome and the bodies of the vertebrae. The apex of this extends to the third rib anteriorly. The

interpretation of this area is doubtful. Extending out from this in the third and fourth interspaces there is a little scattered medium mottling. The paravertebral trunk in the right lung extends into the upper two-thirds of the apex. The linear markings in the right lung in the first and second interspaces are a little heavier than average. In the left lung the linear markings are a little heavier than average below the third rib."

An x-ray picture was taken on June 6th following the introduction of lipiodol. This did not show bronchiectasis, but the lipiodol had not passed the obstruction in the bronchus to the lower lobe. Later, part of the lipiodol must have got by the obstruction as it was found distal to the tumour at autopsy.

Anatomical Diagnosis at Autopsy — Cancer of the lung, (bronchogenic, right lower lobe), hæmorrhage into the lungs, rightold pleural adhesions, right lower bronchiectasis, distal to the tumour, old atelectasis and fibrosis of right lower lobe, lipiodol in bronchiectatic cavity, tuberculosis of right pleura (healed), right spontaneous pneumothorax, atelectasis of left upper lobe, old peritoneal adhesions, multiple leiomyomata of the uterus, pigmentation of the large intestine, hyperplasia of lymphoid tissue of the large intestine.

The right lung measured 19 x 12 x 6 cm. and weighed 16½ ounces. The pleural surface bore a fibrous tag at the apex and numerous tags about the base of the lung. The surface of the lung was puckered at the apex, and here a large bulla of air 1 cm. in diameter was present. A spot on the posterior surface of the lung was roughened by a cluster of four or five small yellowish firm nodules of less than 1 mm. in diameter. The anterior half of the lung was pinkish yellow in colour, marked by a loose net-work of gray anthracotic pigmentation. The colour shaded to a deep red in the posterior parts of the lung. A rudimentary fissure between the upper and middle lobes was present. No other fissures could be distinguished.

The lung was soft and doughy in consistency, except in the region of the cardiophrenic angle where it was quite firm and inelastic. Except in this place, the lung was crepitant throughout. The part of the lung served by the lower bronchial branch was small and of irregularly firm consistency, being firmest at the cardio-

phrenic angle. The main bronchus of this contracted part of the lung was completely occluded by a mass of firm whitish tissue. This mass was firmly attached to the wall of the bronchus in an area equal to about one-quarter of the surface of the mass, and at the point of attachment appeared to invade the wall of the bronchus but not to penetrate it. The remainder of the surface of the mass was free in the bronchus and covered by a glistening fibrous membrane. The mass was roughly mushroom shape, and measured about 5 cm. in diameter at the large end and was contained completely within the bronchus. The large end of the mass lay distally. The containing bronchus narrowed down beyond it to a little more than normal size. The stem of the mass pointed proximally and was unattached. It extended up the bronchus to its juncture with the bronchus of the upper lobe. The cut surface of the mass was creamy white in colour and uniform in appearance, except for an area of hæmorrhage in the large end of the tumour, measuring about one to two cm. in diameter. This area of hæmorrhage led to the surface of the mass at a small point buried in the crevice where the mass was attached to the bronchial wall. Large blood-vessels ran in close proximity to the tumour, but none appeared to be invaded. The bronchus containing the tumour bifurcated distally to it and each branch led to a bronchiectatic dilatation. The larger of these measured about 1.5 cm. in diameter and was full of lipiodol. The smaller measured about 1 cm. in diameter and was full of creamy yellow pus. No other bronchiectatic cavities were present and there was no blood in these cavities. The lung-tissue surrounding these cavities was firm, fibrous and mottled with grayish black anthracotic pigmentation. Clotted blood was present in the bronchus about the tumour. The cut surface of the remainder of the lung was dark pinkish red in colour with widespread blotching of darker red. The peribronchial lymph glands were soft, gray in colour, small, and showed no gross evidence of metastases.

All parts of the body, except the head were examined as carefully as the lungs, and no other significant pathological lesion was found.

Histologically the tumour was made up of cells which closely resembled those of the normal bronchial mucosa. They tended to be cylindrical in shape and to form rows or circular gland-like

structures. The nuclei for the most part stained darkly. The tumour cells invaded the wall of the bronchus in cords and masses, and extended a short distance into the fibrosed lung parenchyma beyond the bronchus. There was a delicate fibrous connective-tissue stroma with numerous capillary blood vessels. (See Fig. 1)

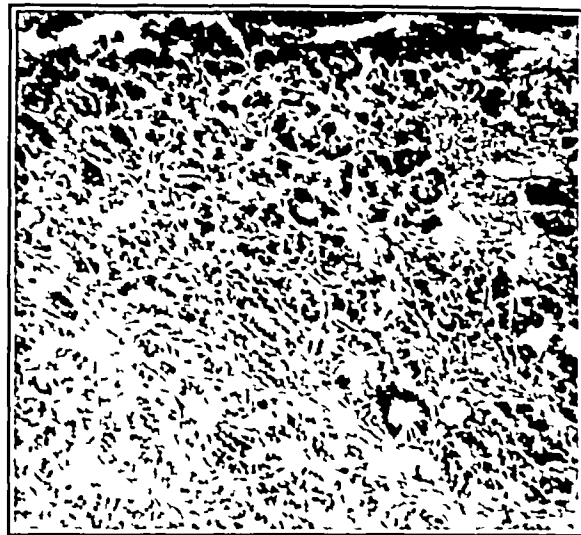


FIG. 1.—Carcinoma of the lung. The section shows the marked tendency to an orderly arrangement of the tumour cells.

DISCUSSION

About 400 other reported cases were looked over and in no other case was the duration so long as in the present one. Two cases of four years' duration have been reported, one by Adler¹ and the other by Kerley.² A case with a somewhat similar history was reported at the Laennec Society meeting in Toronto in April, 1928, the first hæmorrhage being seven years before death, and the autopsy revealing a carcinomatosis of the lungs.

The absence of metastases is noteworthy in a case of such duration as this one. Metastases were absent in 33 of Adler's 374 cases. The microscopical and gross appearance of the tumour also suggested its relatively benign character.

The presence of spontaneous pneumothorax might be explained by the rupture of an emphysematous bulla of the right lung, similar to that described in the autopsy report. Such an event might be brought about by increase in negative pressure in the chest when portions of either lung become atelectatic owing to aspirated blood obstructing a bronchus.

The presence of bronchiectasis was probably secondary to obstruction of the bronchus by the tumour. Such an event is known to be a common sequel of foreign-body obstruction of a bronchus.

The afebrile character of the illness was a strong diagnostic point.

CASE 2

F. D., a white male, aged 42 years. This patient's history dated back only four months before death. The illness consisted of persistent cough and sputum with increasing weakness and loss of weight. His temperature was normal for the most part but showed occasional periods of febrile activity. He had very large serosanguineous pleural and pericardial effusions.

Autopsy—Examination revealed a carcinoma of the left lung, with metastases in the neighbouring glands, parietal pericardium liver, lymph-nodes at the lesser curvature of the stomach, and the right adrenal gland. Healed tuberculosis of the peribronchial glands was found on the right side, and an old pleuritis was present on the right side with areas of calcification. A complete autopsy was performed without the discovery of other significant lesions.

Microscopical examination of the tumour showed it to consist of atypical epithelial cells without any tendency to orderly arrangement. The nuclei varied greatly in size, shape, staining quality and showed numerous mitotic figures. This growth is thought to be alveolo-

genic in contrast to the bronchogenic origin in the first case (See Fig 2).

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- 2 KERLEY, P, *Brit J Radiol*, 1925, xxx, 333

A CASE OF ANURIA DUE TO DIFFUSE INFARCTION OF THE RENAL CORTEX*

By W. DE M. SCRIVER, B.A., M.D.,

Montreal

A. B., a French-Canadian woman of thirty-four years of age, was admitted on September 21, 1928, to the Royal Victoria Montreal Maternity Hospital with the typical history and physical findings of retroplacental hæmorrhage.

Due to the patient's poor memory there was difficulty in elucidating a full history of past illnesses. She stated that she had suffered from pains in the joints some years previously, but had otherwise been quite well. In 1913 she was married and since then had had twelve normal, full-term pregnancies. In November, 1926, there was an abortion in the third month of gestation, and again in September, 1927, in the sixth month. During the past three years the patient had voided somewhat less frequently than had been her habit, approximately three to four times daily, and occasionally once at night. She stated that urination had continued thus up to the time of admission to the hospital. There had never been any œdema, but in this pregnancy she had suffered from flashes of light before the eyes, and attacks of dizziness. She had no knowledge of any pre-existing hypertension.

CLINICAL HISTORY

The present attack commenced suddenly, the day before admission, with sharp pains in the lower abdomen which persisted, the abdomen became rigid and there was a very small hæmorrhage *per vaginam*.

Shortly after admission to the hospital the membranes were ruptured artificially, followed an hour later by the spontaneous delivery of a six months' fetus. About 1000 c.c. of clotted

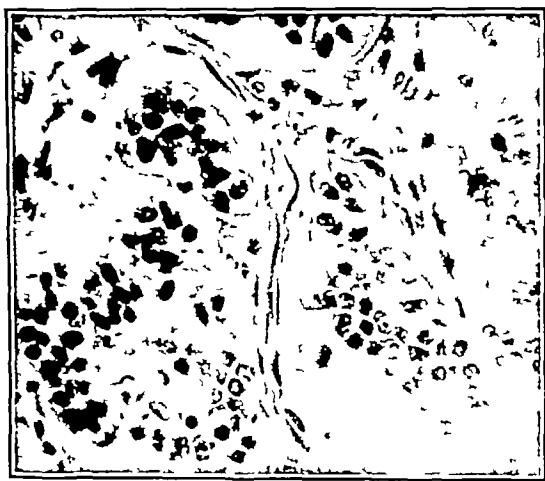


FIG. 2—Carcinoma of the lung. Cancer cells are seen in the alveoli.

* From the Department of Medicine, McGill University Clinic, Royal Victoria Hospital, Montreal.

Read before the Montreal Medico-Chirurgical Society, October 26, 1928.

blood were expelled with the placenta, the surface of which showed many white infarcts

The urine obtained by catheterization on admission showed a large amount of albumen, a few granular casts were noted, together with occasional pus cells and red blood cells, which were thought to be due to trauma in catheterizing. The blood pressure at this time was 170 (systolic) and 110 (diastolic). Seven hours after delivery 25 c.c. of urine were voided, a similar amount was obtained by catheterization five hours later, and only 10 c.c. after twelve hours, a total of 60 c.c. in twenty-four hours. All of these specimens showed a large amount of albumen and a moderate number of granular casts, but no red blood cells were seen.

At this stage the nephritis service of the medical department was called in consultation, when the following physical findings were noted. The patient appeared rational and relatively bright. There was no dyspnoea and no oedema. Pallor was well marked. The teeth were in poor condition, the nose and throat were negative. The pulse was regular, the radial vessels apparently a little thickened, the blood pressure was 160 (systolic) and 110 (diastolic). The heart was enlarged slightly to the left, no murmurs were made out. The lungs were clear. The liver was not enlarged. The abdomen presented the usual post-partum features. Reflexes were active and no pathological signs were elicited. The fundi showed no hæmorrhage or exudate. An examination was made by the department of ophthalmology who reported: "A small, pigmented dot at the end of a small capillary close to the macular area of the right eye. There is also a patch of atrophied retinal tissue somewhat below this spot. This may possibly be, if anything, the evidence of an older acute outbreak of retinitis, it does not represent anything that has taken place at the present moment." The blood chemistry determined at this time showed a moderate urea retention of 0.528 grams per litre, with a more significant creatinine figure of 2.47 mgm per 100 c.c.

In spite of various therapeutic measures, including modified hot packs by means of the electric heater, hot colonic and bladder lavages, intravenous injections of 20 per cent glucose saline solutions, and dry cupping, no diuresis could be induced, a total of 11 c.c. of urine being

secreted on the following day and less than 1 c.c. on the third day. These specimens showed the same chemical and microscopic findings as the previous ones. Complete anuria then followed until the death of the patient on September 30th, nine days after admission.

As it was considered advisable to rule out the possibility of a surgical obstruction, on September 28th a cystoscopy was performed by the urological department in which no marked lesion was found in the bladder and the ureters were easily catheterized as far as the renal pelvis.

Most noticeable in the progress of the condition was the relatively clear mentality of the patient up to the time of her death. In spite of a steadily increasing nitrogen retention with a blood creatinine figure two days before death of 6.66 mgm per 100 c.c., none of the usual uræmic symptoms was noted, while the blood pressure fell steadily from 170 (systolic) and 110 (diastolic) on admission to 135 (systolic) and 85 (diastolic) two days before death.

A second interesting feature was the large output of fluid by the bowel, which ranged from 1,600 to 2,500 c.c. for the twenty-four hour periods, during which the patient was receiving a total of 4,000 c.c. of fluids. This elimination was aided by the administration of one ounce of magnesium sulphate three times daily, it is possible that this may explain why no oedema developed.

AUTOPSY FINDINGS

At autopsy there was no evident oedema, the peritoneal cavity contained about 700 c.c., and the pericardial cavity 40 c.c., of straw-coloured fluid, the pleural cavities, however, were dry. The uterus showed the usual post-partum condition and its vessels were intact. In the heart, which weighed 380 gm., no gross lesions were evident, microscopical section showed a moderate fatty degeneration of the musculature. There were a few small early atheromatous plaques in the aorta, and all the blood vessels appeared to be well preserved. The mucosa of the cæcum and transverse colon was dark red, swollen, oedematous, and riddled with numerous small irregular ulcerations.

Both kidneys were large, weighing 380 gm. each. The capsule was slightly adherent, and when stripped left a bulging surface, pale yellow in colour, with irregular, finely-mottled,

reddish areas On section, the cortex, which measured 6 mm in width, was pale yellow and greasy in appearance, the differentiation between it and the darker reddish and apparently well preserved medulla being much accentuated Between cortex and medulla was a narrow zone, bright red in colour The vessels were engorged, pelvis and ureters were intact

capillaries In some areas which were better preserved there was an exudate of leucocytes and red blood cells, with hyaline casts in the tubules and patchy areas of calcareous degeneration Directly under the capsule was a narrow band of relatively well preserved cortex The cells of the medulla showed no marked lesions, the straight tubules containing scattered hyaline casts



FIG 1—($\times 10$) Photograph of a small area from a complete longitudinal section of the kidney, eosin hæmatoxylin stain Numerous infarcted glomeruli can be seen as small dots In many cases their connection with the infarcted vessels is easily to be made out The area of hyperæmia and extravasation in the cortex adjoining the medulla is well shown

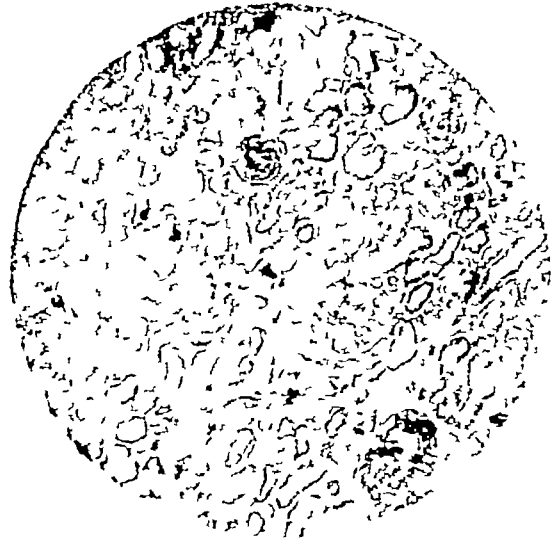


FIG 2—Higher power view of the cortex Note the necrosis of the tubules, many of which contain hyaline casts In the upper half of the field a thrombosed artery is seen, while at 5 o'clock is a glomerulus, the afferent artery of which is filled with thrombus

and clear Microscopical sections showed that the appearance of the cortex was due to massive infarction, with simple necrosis of the parenchymatous cells, the blood vessels being dilated and filled with blood and organizing thrombus, this condition extending into the

The etiology of this remarkable condition is being made the subject of a study by Professor Horst Oertel, who will make a further report on a pathological basis My thanks are due to him for permission to use the autopsy records in preparing this case report

Anti-Diphtheritic Immunization at the Maritime Hospital of Berck—Drs M and G A Mozer and Cofino give the results of the immunization of the children in this hospital during the past three years During this period there were admitted 1,100 children afflicted with external forms of tuberculosis and rickets During the three years previous to the institution of this procedure (December, 1925) there were 137 cases of diphtheria, of whom 12 died Subsequent to this date

there were only 36 cases, 16 of whom were among the non vaccinated, with one death, and 11 in children who had received only two doses of antitoxin They found after three injections of anatoxin that the proportion of positive Schick tests fell from 36 to 4.5 per cent A fourth supplementary injection reduced to 4 the number of 44 patients in whom the Schick test had remained positive—*Le Progrès Médical*, 1928, *Ann*, 1757

Editorial

THE MONTREAL HEALTH SURVEY

THE Montreal Health Survey, in view of the many interesting features it presents, stands as a demonstration of the necessity of making such surveys before planning any concrete, rational program of health work. Facts are thus brought to the surface, eloquent figures are found, and a full analysis of the situation is made possible. Public attention is then focussed on the recommendations presented, based on the survey, with the best prospects for their realization. Therefore, anyone interested in promoting public health in any community cannot but congratulate the Montreal Anti-Tuberculosis and General Health League upon the presentation of such a complete survey of health conditions in Montreal.

The time is now opportune to analyse the conditions necessary for the carrying out of the program laid out for improving existing conditions. As these conditions apply practically to every community their brief presentation in the *Canadian Medical Association Journal* seems to be advisable.

The first of these conditions is *the hearty co-operation of the medical profession*. Medical men are the natural advisors of the laity on health matters. Their routine daily contact with the sick draws their attention continually to the problem of prevention. So many are the evils encountered which could, and therefore, ought to, have been eliminated if proper measures had been resorted to in time! Contagious diseases, acute infections, industrial and other accidents, are illustrative examples. In their prevention members of the medical profession have their share. They must notify the proper authorities of all contagious cases they meet in their practice. They must help in every way in isolating these patients, in protecting contacts, particularly in excluding from school children living in the same home. They must give all possible information helpful in the carrying out of the epidemiological survey. They must also advocate and practise as much as possible vac-

cination against those diseases which can be so prevented, particularly small-pox, diphtheria and typhoid fever. They must keep themselves informed on the progress accomplished along these lines by scientists, notably in the case of scarlet fever and tuberculosis. With such help unreservedly given by the medical profession one can easily realize how much greater protection can be afforded our population.

A second condition essential to the success of any health program is *the qualification of the personnel taking part in its realization*. It is now known, and it must be accepted by all concerned, that public health is a specialty in the immense field of medicine. No one to-day can adequately cover all the subjects included in the medical sciences. Dr. George Vincent, President of the Rockefeller Foundation, in his annual report for 1923, has rightly pointed out this need in the following terms:

"The Rockefeller Foundation fixes its attention upon permanent, constructive activities in the fields of public health, medical education, and the premedical sciences. Experience clearly shows that the fundamental need in the progress of preventive medicine is a specialized personnel, thoroughly grounded in the underlying sciences and familiar with the best methods of practical application and administration. The idea that an ordinary medical education fits a doctor to be a health officer is a serious error which does much harm. He needs additional graduate training for what is recognized as a special profession."

This statement from so high an authority implies a twofold conclusion—that our universities give the necessary training, and that our health agencies, official and voluntary, make this training a *sine qua non* for the appointment of their personnel, medical, nursing, etc.

A third condition necessary in health protection extended to the community is *the development of the voluntary health agencies*.

These organizations, enjoying more freedom, can undertake special investigations, and can adopt particular activities more easily than the official departments. They possess also the additional advantage of being free from political interference. We are provided already with these agencies and their contribution to public health is a very valuable one. Their aim is to carry on their program harmoniously and side by side with the official health departments.

A fourth essential condition in the success of any project in health matters is *public support*. This implies the absolute necessity of health education. For its achievement all must participate, our school and university authorities as well as the medical profession. The teaching and the practice of hygiene in our elementary schools could well be further developed with great advantage. At the

University of Montreal, lectures on hygiene are given to the students of all the faculties and affiliated schools. The aim is to prepare the leaders of to-morrow to better understand and carry on their responsibilities, when in office as members of school commissions, municipal councils, or in the provincial legislature. The medical profession has also the duty of co-operating in the educational movement of the population in health matters. Naturally, all look to the medical profession for guidance in these questions.

Let us hope that, with all these conditions fulfilled, and others which might be added, the health survey of Montreal will be helpful not only to the city proper but also to all the municipalities of the country. It is our duty to aid in extending its benefits to all of our countrymen.

J. A. BAUDOUIN

THE PRESENT STATUS OF THE ANTIRACHITIC VITAMIN PROBLEM

A FEW years ago those interested in the newer therapy of rickets were much puzzled by the fact that this disorder could be cured by two such different agencies as ultra-violet light and cod liver oil (through its content of vitamin D). The matter was considerably clarified when it was discovered that radiation of the food in experimental rickets in rats also afforded protection, and another step forward was taken when it was found that radiated cholesterol added to a rachitic diet also conferred immunity toward rickets. Since cholesterol is a ubiquitous substance so far as living cells are concerned, it was easy to bring the phenomena of light action and cholesterol action together by assuming that light *per se* was effective because of its activating action upon the cholesterol in the skin.

It then became a matter of interest to discover the nature of the action of light upon cholesterol which gave the latter its antirachitic property. It seemed a foregone conclusion that cholesterol must be the parent substance (the provitamin) of vitamin D, since those investigating the problem had been careful to obtain cholesterol of presumably absolute purity. It seemed as though ultra-violet light must either produce

some obscure change in the cholesterol itself or cause some active substance to be formed from it. It was even conceivable, in a vague kind of way, that a portion of the energy of the light used might be stored by cholesterol, later to be given up to the animal and to produce the antirachitic effect.

Finally, however, it was discovered that not every sample of cholesterol could be converted into an antirachitic agent by ultra-violet light. When cholesterol, for example, was first converted into a chemical derivative, cholesterol dibromide, which was then changed back to cholesterol, the substance so obtained, though identical so far as a chemist could determine with the original substance, was no longer activatable by light. Other methods of treating cholesterol also led to the formation of products which could not be activated. It was natural, therefore, that the view should appear that perhaps the cholesterol which had first been used was not as pure so had been believed, that possibly the active agent might be a contaminating substance so similar to cholesterol that in the processes of purification it was not eliminated. Rosenheim and Webster, of the National Institute for Medical Research in London, became convinced of this

through their experience with cholesterol purified by the dibromide method mentioned and called the hypothetical provitamin "vitasterol." They communicated their experience to Windaus in Göttingen, who had become interested in the problem through Hess of New York, who, simultaneously with, but independently of, Steenbock of Wisconsin, had discovered the activating effect of light upon various foodstuffs. Windaus, to whom much of what is known concerning the chemistry of sterols (to which group of chemical substances cholesterol belongs) is due, suggested that a sterol called ergosterol might be the real provitamin of rickets, the vitamin itself being formed from it by the action of ultra-violet light.

When this view was put to the test by Hess and Windaus, Rosenheim and Webster, and since by many others, it was found that ergosterol when radiated did actually confer immunity to rickets and cured rickets already developed. At the present time, therefore, it is current opinion among those working at the problem that ergosterol is the provitamin of rickets. Investigation of a number of compounds closely allied to ergosterol has proved them to be non-activatable, hence the view appears justified that ergosterol is the specific parent substance of vitamin D.

The sterols fundamentally are alcohols, but their relation to ordinary alcohol is exceedingly slight. The molecule is much more complex than that of ethyl alcohol. A complete formula for ergosterol cannot be written at present. It is what the chemist calls an unsaturated compound, there being double bonds between some of the carbon atoms which make it a rather reactive compound. One of its most useful attributes is the fact that when ultra-violet light is passed through

a solution of it some of the rays are absorbed, forming so-called "absorption" bands. These are quite characteristic and there is reason to believe that it may be easier to determine the vitamin D content of foodstuffs by means of the spectroscope than by experiments with animals or by a chemical method for the determination of ergosterol.

The nature of the change produced in ergosterol by ultra-violet light which converts it into the actual vitamin is at present wholly unknown. Likewise, the action of the vitamin in the body is largely unknown though it has been suggested by Hess that its action may be indirect, through stimulation of the parathyroid glands, thus raising the calcium content of the blood, which is low in rickets. That irradiated ergosterol does raise the calcium content of the blood, there is no doubt, and that it may do so through a mechanism involving the parathyroids is conceivable.

It was at first believed that there was no danger in administering an excess of vitamin D, but recently this view has been questioned. Following very high dosage excessive laying down of calcium in some tissues has been reported and Hess states that in children fever and a peculiar state of drowsiness have been observed occasionally. It is suggested by Hess that 0.5 mg. of ergosterol be used as a prophylactic and 1.0 mg. for the average case of rickets, both being daily doses. These are equivalent to about 7 and 14 teaspoonfuls of a good preparation of cod liver oil. Ergosterol is therefore about 15,000 times as efficient as cod liver oil.

Ergosterol, probably through its effect on the level of blood calcium, is quite as effective in tetany (including tetany in adults) as in rickets, and favourable results have been reported in osteomalacia.

R. L. STEINLE

AVERTIN ANÆSTHESIA

SINCE the spring of 1927 numerous papers and references have appeared in the German medical literature concerning a new general anæsthetic, at first called E 107 and later "Avertin." It is a product of the pharmacological division of the dyestuff industry, has been supplied for trial to a

number of hospitals, but thus far has not been released for general use.

Chemically avertin is tribromomethyl alcohol ($\text{CBr}_3\text{CH}_2\text{OH}$), a crystalline compound soluble in water to the extent of 3.5%, the solution undergoing decomposition when heated to 60° . It is detoxicated rapidly in

the liver by conjugation with glycuronic acid (1166 gm have been given in seven days in a case of tetany, successfully treated, without noticeable damage) Injury to the liver and kidneys seems to be practically nil

Avertin is administered rectally in aqueous solution Sleep ensues usually in from three to ten minutes without the appearance of any unpleasant symptoms and lasts for about two hours, being then followed by what is referred to as an after-sleep lasting for several hours On awaking there are no unpleasant recollections, and postoperative vomiting, headache, and salivation are practically absent Patients who have been subjected to both ether anæsthesia and avertin anæsthesia have had no hesitation in stating preference for the latter However, the opinions of surgeons have not been unanimous in favour of avertin A number of deaths have been attributed to its use and rather numerous cases of alarming circulatory and respiratory depression have been reported

When the fact is taken into consideration that the early use of avertin was necessarily of an orientating character it would appear that these early unfortunate experiences should not be allowed to weigh too heavily against it Indeed a change of view has taken place with regard to its probable field of usefulness, and it may be that, while avertin will doubtless not turn out to be a complete substitute for ether, it may find a more modest but still useful place among anæsthetics In the beginning the attempt was made to use avertin alone and in all cases as the sole anæsthetic agent It was soon found, naturally, that the same dosage (on the basis of body weight) was not always equally effective, that the higher doses (up to 0.2 gm per kilo), often necessary to produce complete muscular relaxation, sometimes produced serious falls in blood pressure and occasionally temporary cessation of respiration By using smaller doses it was observed that, while complete surgical anæsthesia was obtained only part of the time (in approximately 50 per cent of the cases), the amount of ether required as a supplementary anæsthetic was often so small that the recovery period resembled that of a good case of avertin anæsthesia rather than that of ether anæsthesia Of course when the quantity of ether used was large its post-operative

actions became evident The procedure of starting with a small dose of avertin and then administering additional amounts to produce surgical anæsthesia has not found favour At present 0.1 gm of avertin per kilo is not exceeded by numerous surgeons, some ether then being necessary in many instances

In the beginning, in addition to deaths from circulatory and respiratory depression, several deaths also occurred from local intestinal damage This appears to have been due to the use of solutions heated to too high a temperature in their preparation, the dibromacetaldehyde formed being injurious locally Since this danger has been known and avoided practically no intestinal damage has been noted Other ill effects which a few surgeons have attributed to avertin have been post-operative excitement and increased bleeding, but these opinions do not seem to be shared by the great majority of those who have used it

Theoretically, avertin may be objected to on the score that once given its action cannot be recalled This argument loses its force somewhat if the substance is used as above mentioned—in minimal dosage with ether as a supplement

The long recovery period has been regarded by some as an advantage and by others as a disadvantage The depression of post-operative pain may cause it to be regarded in the former light On the other hand the patient requires considerable post-operative watching because of the possibility of breathing being interfered with by falling back of the tongue

Obstetricians seem to be divided on the question of the applicability of avertin in parturition Some find the position of the fetus to interfere with its administration, and others state that the solution is frequently ejected during the contractions Just when to give it also constitutes something of a problem

A few papers have appeared concerning the use of avertin in psychiatry The observations have been quite favourable Quick sleep is said to ensue in the most violent cases

In the case of hyperthyroidism the opinions are conflicting Some describe their experience in most favourable terms, others seem to have been less fortunate R L STEHLE

REFLECTIONS ON MEDICAL WRITING

IT is the privilege of a retiring President to employ considerable latitude in choosing the subject for his final address. Dr W B Howell has exercised this privilege freely—and delightfully—in the address we publish in this number of the *Journal*. His “reflections” are those of a specialist, it is true, but they are refreshingly free from the usually, though not at all necessarily, narrowing influence of specialization. Instead, we have the outlook of one who is not only keenly alive to the real importance of the apparently trivial and frequently neglected details which accompany the giving of anæsthetics, but who also shows himself to be appreciative of matters quite remote from the subject of anæsthesia.

We cordially endorse his comments on the carelessness of expression which is so frequently evident in medical writings of the day. It is quite true that very few possess the gift of writing attractively, but how much less unattractive might a great portion of medical writing be made—to say nothing of how much less would be printed—if more pains were taken to use clear and exact English. The more one sees of medical writing the more surprised one is at the incoherence of the average writer, and also at the discrepancy between the excellence of his actual work and the confused expression of his thoughts. How can we avoid the conclusion that the thinking itself is confused?

One feels also that writing is often bald and uninviting because the writer does not really believe that it matters very much about the choice and arrangement of his words if they convey something of his meaning; he is content. How difficult is the task they are sometimes given to perform!

It would be easy to add to the illustrative examples so aptly given by Dr Howell. Take the following sentence which appeared in a recent number of a leading medical journal, “This disease (tularaemia) stands unique as the first truly American disease, and the guiding spirit that has made the accomplishment possible is Dr Blank.” Could we blame a disinterested reader of this statement for thinking that Dr Blank had brought about this disease himself? Or, take this sentence from a paper on a surgical case: “In view of her improvement a posterior gastroenterostomy was done.” The disinterested reader again might conclude that the woman would have done better *not* to improve.

On no point are we in more heartfelt agreement with Dr Howell than on the gross distortion of the word “pathology” to its indefensibly slipshod use as a synonym for disease itself. Where indeed shall we stop in the development of such inaccurate terminology? We are surprised that Dr Howell, in forecasting the changes in the Prayer Book which might be expected to result, did not suggest that the rhythmical beauty of the phrase “in sickness and in health” would probably be replaced by the cacophony of “in pathology and in physiology”!

This is a *reductio ad absurdum*, but if the would-be author persists in letting his sentences run loose he must not be surprised if they sometimes appear absurd to those who watch their antics. Still less should he be surprised at failing to make his meaning clear if he mutilates his language by a slothful indifference to the accepted meaning of its words.

H E M

A TERCENTENARY THOUGHT

THREE hundred years does not seem to be a long time in retrospect. It does not take us back to the discovery of America or even to the founding of Port Royal or Quebec. And, yet, less than three hundred years ago, men suffered under the thralldom of authority, ecclesiastical and other, to an

extent which can scarcely be realized today. It is now three hundred years since Harvey gave “*De Motu Cordis*” to the world. It was published after years of hesitation, after the main features had been expounded to physicians, medical students and scientists, and against the advice of Harvey’s best

friends There was much fear of offending dignitaries of Church and State Perhaps because of this, but more probably because of the promise of better sales, Harvey went to Frankfurt for a publisher It is unlikely that he chose a foreign publisher because of timidity We read that Harvey, who was court physician to Charles I, accompanied that monarch into the field of battle at Edgehill, that he became sated with the spectacle of battle, and while the fighting was most severe he sought out the shade of a hedge where he promptly became engrossed in the reading of a work on "Generation" A man who could sit quietly reading while a furious battle was being waged about him was unlikely to have much fear for personal safety There is some reason for the belief, moreover, that the caution which Harvey showed was due to reasons of state, for he was an intimate of the Court, rather than to fear of personal suffering as a result of publishing a work which opposed all the current teaching about the function of the heart and blood vessels

The publication of the book created a storm, and Harvey was vigorously denounced in all quarters Gradually, however, there came a realization of the reasonableness and importance of his teaching, but, while he gained many adherents, it was not until after his death that Malpighi could demonstrate microscopically that Harvey had really contended for the truth

"De Motu Cordis" was published in 1628 In the three hundred years which have elapsed, a great change has come over mankind No book of such momentous importance has since been published Today, of the making of many books there is no end There is no fear that the presentation of novel views will create hostility of either Church or State We are very free, but are we much better off? It is possible that earlier publication of "De Motu Cordis" might have proved beneficial to mankind On the other hand, it is probable that it would be of general advantage if many of the books being published to-day were withheld from some years for deliberation and for the amendment which such deliberation would likely bring about Few have the patience of Mortgagn, who waited until he was well advanced in years before giving his great work to the world It is just possible that keener scrutiny and franker criticism of new books would have a restraining influence upon our impetuous authors. As it is, we really suffer from lack of restraint, and while we scarcely wish a return to the conditions of Harvey's day, we might be the better for some control Certain it is that the freedom we profess to enjoy requires each of us, in the course of his reading, to winnow out much chaff, and to be content with less than the expected amount of wheat If the present tendency persists, what will the outcome be?

W H. HATTIE

OUR FATHERS

The Roman gather'd in a stately urn
The dust he honour'd—while the sacred fire,
Nourish'd by vestal hands, was made to burn
From age to age If fitly you'd aspire,
Honour the Dead, and let the sounding lyre
Recount their virtues in your festal hours,
Gather their ashes, higher and still higher
Nourish the patriot flame that history dowers,
And, o'er the old men's graves go strew your
choicest flowers

SOMETHING of the spirit voiced in a poem by the great Nova Scotia statesman, Joseph Howe, of which the above is the concluding verse, led the medical profession of the Bluenose province to a notable celebration during the week of October 15th The occasion was the seventy-fifth annual meeting of the Medical Society of Nova

Scotia, when a number of medical events were very happily combined, including the diamond jubilee of the Dalhousie Medical Faculty Naturally, such events created an atmosphere of retrospection, and men reminded themselves and one another of the worthies of other days, who were pioneers in the Society and in the Medical School Some of the difficulties which had to be overcome were spoken of, but how can we of this day estimate the courage, the faith, and the perseverance needed to win through in the pioneering times!

Perhaps, because of unwillingness to admit inferiority, we sometimes endeavour to comfort ourselves by professing that life was

never before so complicated or so difficult as at the present time. We almost envy the serenity of the age when science moved but slowly, slowly, in contrast to the mad haste with which it now bounds from place to place, inciting us to furious effort to keep the moss off our backs. Even though our forebears moved in a circle ("with much iteration and small progress," according to Francis Bacon) just as we do, we like to feel that their pace was slower than ours and therefore less conducive to dizziness. If there is some uncertainty about this, we can assert positively that never before the birth of this century were the nerves of medical men flayed by the flaunting of pictures of rats fed on devitaminized diets. Our forebears were spared such horrors, didn't even dream of vitamins, and had no worries about calories. When they used the lancet (*magnum donum Dei*, as it was termed by Rush) it was seemingly with a delightfully cheerful abandon, they gave little thought to transfusion, and the "matching" of blood did not concern them in the least. Nor did they have to face the bewildering problem of how to vaccinate a gul where it would not show. Because of such things, we say they lived the simple life, and fancy ourselves to be much more "put to."

The early meetings of the Medical Society of Nova Scotia are recorded in singularly legible hand-writing which really looks like copper-plate. Many of the s's bear a striking resemblance to our f's, otherwise there is nothing to suggest that the physicians of seventy-five years ago were not men of like passions to us. They had no inkling of the

enormous studies which were to be made in three-quarters of a century, but they were zealous to improve the status of the profession and to increase its usefulness to humanity. And the story of the beginnings of the medical school at Halifax is one of heroic struggle and sacrifice such as could be maintained only by men of enduring faith and almost prophetic vision. It is well that we should look back over the records of these early days and of the men who laid the foundation of a structure in the building of which we are privileged to share. Some of our smugness departs from us as we learn of the difficulties the "old men" had to overcome, of their high sense of professional honour, and of the sheer determination with which they faced a future of which they could hardly feel confident. Because of the trials and struggles and triumphs of these men we have a goodly heritage—the lines have fallen to us in pleasant places. When we recount their virtues we merely acknowledge a debt we cannot pay. Surely the least that we can demand of ourselves is to fitly aspire and honour the dead by reverently cherishing their memories, and to keep the torch they transmitted to us alight and aloft until we must pass it on to our successors. This sentiment evidently played a part in determining the program for the Bluenose celebration, which provided not merely thought upon the past but instruction and inspiration for the future. The celebration was admirably conceived and carried out in a way which won the unstinted plaudits of those in attendance.

W. H. HATTIE

Editorial Comments

CANADIAN PUBLIC HEALTH ASSOCIATION, SEVENTEENTH ANNUAL MEETING

The Canadian Public Health Association held its annual meeting during the week of October 8th, in the city of Winnipeg. This Association is an organization largely made up of those specifically engaged in the field of preventive medicine. With the exception of one meeting of the Section of Public Health Nursing, and one meeting held by the Section of Laboratory Workers, the sessions were of a general character, and the subjects presented for consideration, while covering every phase of public health

activity, were of sufficient general interest to demand the serious discussion of those in attendance. Particularly true was this in the case of the report of the Committee on Regulations governing Communicable Disease Control and the symposium on County Health Units. There seemed to be no conflict of opinion among those present as to the early necessity of a change in our method of public health organization as it applies to rural and small urban communities, and there existed an equal measure of dissatisfaction with the measures set aside in some of the provinces for dealing with certain of the minor communicable diseases.

The meeting, which was probably the most representative one held by the Association in recent years, brought together members of the Association from seven of the nine provinces in the Dominion, and with almost one-half of the registration being from outside the Province of Manitoba, was deemed to be sufficient evidence of the continued usefulness of the Association to warrant the purchase of the present organ of the Association, namely, *The Public Health Journal*, which, commencing January 1, 1929, will be edited and published by the Association itself.

Both the city of Winnipeg and the Province of Manitoba evidenced their interest in the Association by their hospitality, and the members carried away from the meeting not only much that was of profit but recollections that were pleasant in the extreme. Much of the credit for the success of the convention was due to the efforts of the local Committee on Arrangements, which was headed by The Honorable W. E. Montgomery and Dr. Douglas.

J. T. PHAIP

ANNUAL REPORT OF DEPARTMENT OF PUBLIC HEALTH OF NOVA SCOTIA*

Some interesting facts are to be found in the recently issued report of Dr. A. C. Jost, late Provincial Health Officer for Nova Scotia. The general death rate is 11.9 per 1,000 which is one of the lowest recorded for the province, and the tuberculosis death rate has fallen below that for the previous year. On the other hand the infant mortality has been higher than in past years, due largely to conditions in the mining areas. There is very wide variation between the rate in the mining town of Glace Bay, for example, where it is 195.6 and the agricultural town of Menton where it is 36.3. The report shows clearly how the rates are to be accounted for.

As regards the birth rate, Dr. Jost makes the following comment:

"A feature quite noticeable in the records of the province is the evidence that it is participating in the very widely experienced reduction of the birth rate, which has caused comment almost wherever records are being kept. With each year since 1921-22 there has been a reduction in the number of births taking place in the province, so that during the year the number of reported births was smaller than had been reported for many years."

* *Public Health Journal*, 1928, xix, 282.

Another point brought out by Dr. Jost is the alteration in the ages of the mothers. Most of the decreases in births (about 85 per cent of the total decline) has been amongst mothers up to the age of thirty, there is now a higher percentage of births amongst mothers aged 31 and over. No attempt is made to explain these variations, and it is stated that similar changes have been noted in other places. There can be little doubt that modern industrial and social conditions are partly responsible for marriages taking place somewhat later in life, and to some extent in delaying the bearing of children.

But social conditions are not the only factors which influence variations in a country's birth rate. In the discussion at the British Medical Association's meeting this year, on the subject of "The falling birth rate," it was shown that from a biologist's point of view a decline in the birth rate was something that was expected to occur in the natural course of things, in all populations†. In Dr. Crew's words, "To the biologist a falling birth rate is nothing but the sign of the approaching end, not of a people or of a culture, but merely of a population growth-cycle."

H. E. M.

† *Brit. M. J.*, 1928, ii, 477.

THE JOURNAL OF THE COLLEGE OF SURGEONS OF AUSTRALASIA

The College of Surgeons of Australia has published the first number of the journal which is to record their activities. It is intended also, however, to make this journal the medium for publishing original papers which will reflect the progress of surgery in Australasia. We note with interest in the present number articles on the development of similar colleges in England, Ireland and the United States.

We extend our congratulations to the editorial board of this publication and our best wishes for its success. The first number has set a high standard of excellence, both in material and in general appearance and if this standard be kept up the success of the venture is assured.

H. E. M.

We regret to hear, as we go to press, of the severe illness of Prof. Oskar Klotz, of Toronto, on his way home from Africa. We are glad to learn that the worst is past. His recovery, however, it is said, will be slow.

A. D. B.

Special Articles

THE RECENT TRIP OF THE CANADIAN TUBERCULOSIS ASSOCIATION REPRESENTATIVES

By J H ELLIOTT, M D,

Toronto

On August 24th, a party of thirty-two physicians, members of the Canadian Tuberculosis Association, sailed from Montreal on the *White Star S S Regma*, to study various phases of antituberculosis work in Great Britain, France, Switzerland and Italy. The objectives were the Sixth Conference of The International Union against Tuberculosis, held at Rome September 24th to 27th and the Annual Meeting of The National Association for the Prevention of Tuberculosis, held in London, October 15th to 16th. An itinerary was arranged whereby the party was able to observe many and varied activities in the countries visited.

That such a large party from Canada should attend the congress was made possible through the action of the Sun Life Assurance Company of Canada, in placing at the disposal of the Canadian Tuberculosis Association thirty scholarships to be awarded to tuberculosis workers, selected from each of the provinces of the Dominion. The party included sanatorium physicians, directors of clinics, tuberculosis officers (diagnostic services) of various provincial government, and included the secretary and president of the association. With a few exceptions, the men were accompanied by their wives or other members of their families, making in all a group of nearly seventy travelling as a party.

From the day of their landing at Liverpool when they were first the guests of the Dean and Chapter of the Cathedral, and, then, luncheon guests of the Corporation at the Liverpool Open Air Hospital, until eight weeks later, previous to re-embarking for Canada, when they were officially received by the Lord Provost and Corporation of the City of Glasgow in the *Satinwood Room* of the City Chambers, with the Under Secretary of State for Scotland present, the party were received and entertained with the utmost courtesy and kindness.

The itinerary, with over one thousand miles of motor trip, included Great Britain, France, Switzerland and Italy. The impressions of representative members indicate that the tour has been not only extremely interesting but most instructive. The attention of the medical members was directed to matters pertaining to

tuberculosis and to various public health aspects both in administration and practice.

Among the problems investigated were the following: municipal housing schemes, sanatorium construction and equipment, diagnostic and therapeutic measures, post-sanatorium care of the tuberculous, infant and child welfare, special measures and activities to protect children from infection, governmental and voluntary contributions to maintenance and construction programs, public health activities and administration, as exemplified in such cities as Birmingham, London, Paris, Nancy, Edinburgh and Glasgow. Great Britain's national tuberculosis scheme was outlined at the Ministry of Health, Whitehall, by Sir George Newman and Dr F J H Coutts. In France the national and departmental plans were presented by the Comité National de Défense Contre la Tuberculose. In Italy the national scheme with the outline of compulsory insurance against tuberculosis was presented to the International Conference in the reports of the Italian National Fascist Federation against Tuberculosis.

Officially received or entertained as guests of the Corporations of great cities, such as London, Liverpool, Birmingham, Glasgow, Orleans, Paris and the Department of the Seine, Nancy and the Department of Meurthe-Moselle, and by the Governor of Rome, every facility was offered for the study of all that related to the objects of the tour.

An important feature was a daily conference on the ship eastbound, with general and helpful discussion of such subjects as sanatorium construction and costs, sanatorium administration and costs, travelling clinics, tuberculosis in childhood, Calmette's vaccine, and tuberculosis progress in Canada. On the return voyage, in spite of tempestuous seas, opportunity was taken to crystallize opinions and observations made on the tour in relation to such subjects as government aid, national schemes, milk-borne tuberculosis, sanatorium construction, protection of the exposed child, treatment of non-pulmonary forms of tuberculosis, orthopaedic practice in bone and joint infections, natural and artificial heliotherapy, colonies and after care, clinical practice in pulmonary disease, including graduated exercise, sanocrysin, and occupational therapy.

Great Britain offered an interesting field for the observation of methods of treatment of the non-pulmonary forms of tuberculosis. For example, in Glasgow the death rate from pulmonary tuberculosis is 92 per 100,000 and from non-pulmonary, 36 per 100,000. This city has

under observation 4,900 non-pulmonary cases. It has 450 beds for non-pulmonary cases in hospitals and sanatoria and is building at Mearnskirk for 330 additional beds. Surgical operative interference in bone and joint tuberculosis is less frequently seen now than a few years ago. With the recognition in Canada, as elsewhere, that tuberculosis is a general disease and rarely local, more and more of such cases are referred to our Canadian sanatoria for general care and prolonged rest treatment. In arranging the tour this phase of orthopaedic treatment received special attention. Special clinics were arranged by the staffs of many institutions under such well known surgeons as Sir Henry Gauvain, at Alton and Hayling Island, Mr Girdlestone, at the Wingfield Orthopaedic Hospital, Oxford, Mr Jardine, at Edinburgh, Mr Watson, at Robroyston, Glasgow, T Hartley Martin at Leasowe, Liverpool, and Dr Rollier at Leysin. This highly specialized instruction was much appreciated, and with other lectures and demonstrations, such as that given by Sir St Clair Thomson on laryngeal tuberculosis, cannot but be reflected in practice in Canada.

It was noted with interest that a steadily increasing number of sanatoria are establishing workshops with various industries, on an economic wage, for patients able to do a part day's work but unable to compete in the general labour market. In connection with a few sanatoria these have grown into colonies or village industries where the patient or ex-patient is able to live with his family and be self-supporting. The scheme presents many difficulties. It has proved most successful where the patients are ex-service men who have a pension. This with their wages or earnings from part time work enables them to support a family in comfort, while working under conditions which lessen the probability of relapse.

In France no opportunity was lost to secure information as to the results of an extensive movement to prevent tuberculosis by the placing of contact children in tuberculosis-free homes, the method first devised by Grancher and modified by Léon Bernard and his co-workers. Visits to the clinics at the Laennec Hospital, a train trip to Orleans, and a motor trip of sixty kilometres through the countryside south of Orleans, gave the party a practical demonstration of the truth that prevention is better than cure. Whereas many of the children who remain in an infective environment die of tuberculosis, those who are removed for a period of four years show no deaths from this cause, and the mortality from all causes is greatly lessened.

Calmette's method of preventive vaccination of contact children was a subject of great interest. Clinical workers in France seem to have rather generally accepted his claims and his

evidence. In England the general verdict is "not proven." Petroff, of Saranac Lake, believes that the whole experiment must be gone over carefully before the results claimed can be accepted. We believe the League of Nations has drafted a basis of statistical inquiry, which, if followed over a sufficient period, will aid in arriving at a conclusion as to the efficacy of B.C.G.

The application of natural and artificial heliotherapy in the treatment of non-pulmonary and pulmonary tuberculosis was the subject of extensive inquiry. The Finsen lamp was found to be generally used, and successfully used, in lupus, a rare disease in Canada. In the use of natural and artificial heliotherapy the patient is also subjected to the effects of air exposure and it appears difficult to arrive at any basis of actual valuation of these two therapeutic agents. In Scotland, the air bath, with but little direct light exposure, appears to have given excellent results. Further experimentation and investigation appear necessary to settle some controversial points. Heliotherapy, natural or artificial, is capable of doing immense harm if improperly applied, and it seems fitting to issue a word of caution to the public as to the over-use, and indeed dangerous use, of such powerful agents as sunlight and various forms of artificial light treatment. One strict rule was found to be universal, that direct exposure to the sun is never to be used in febrile cases.

That Italy is wide awake to the importance of national action against tuberculosis is indicated by the fact that in addition to a definite public health program a yearly appropriation is made of 300,000,000 lire for tuberculosis work by the Mussolini government. His Excellency Benito Mussolini presided at the opening of the conference, and was also at the reception given by the President of the Fascist Federation against Tuberculosis, when a number of the delegates were presented. In addition to the three leading discussions, lectures were given by Prof Brauer on "The surgery of pulmonary tuberculosis," by Prof Morelli on "Foilanni and pneumothorax," by the Minister of National Economy on "Compulsory insurance against tuberculosis in Italy," and the Italian Department of Health projected a most interesting and instructive film, illustrating the active work of the department in industrial hygiene, municipal hygiene, and antituberculosis work in Italy. Canadian delegates were nominated to take part in discussions on the program and made excellent contributions in the short time allotted.

At the meeting of the National Association for the Prevention of Tuberculosis in London the Canadian contributions were of a very high character and reflected great credit upon Canadian medicine.

The members of the tour have returned with

a vast amount of valuable information, some of which, it is hoped, will be made available through the columns of the *Journal* to its readers. Some practical measures applicable to Canada and its provinces should be evolved from such a comprehensive plan of study and investigation as that undertaken by the Canadian Tuberculosis Association.

ACUTE CONDITIONS IN THE LOWER ABDOMEN OF THE FEMALE*†

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[This address is reprinted in full from the *British Medical Journal*, 1928, II, 475—ED.]

Two general considerations

1 The genital tract in the female is a hollow cylinder, bifurcate above, which communicates directly between the skin surface and the peritoneal cavity. A direct channel, or avenue of communication between a contaminated skin surface and this mesothelial space! (Victor Bonney)

And this genital tract is subject to many vicissitudes. There are the traumata of menstruation, of childbirth, and abortion, and the dangers associated with venereal disease. It is an imperfect world. Hence in the female the frequency of acute infections of the lower abdomen.

2 The peritoneal cavity is one of the three large enclosed chambers of the body—it is the largest of the three, the largest lymphatic space. Its absorptive surface is immense, compared either with the pleura or the subdural space. Hence the danger of an acute infection of this large space. The peritoneal cavity—an organismal Valhalla—a perfect incubation chamber.

These acute conditions are sometimes grouped together under the term, "The acute abdomen," "The emergency abdomen," or "The abdominal emergency." The point of the emergency concerns both the patient and the surgeon, and any given individual has only one abdomen. To open or not to open—that is the question, a decision oftentimes of very grave importance.

I need not tell you that the opening of the abdomen should never be lightly or carelessly undertaken. I object to the term of "giving the patient the benefit of an exploration." "Open and see" is a foolish behest. If too often done this may be interpreted as "condemning

the patient to an added injury." In surgery we must remember the three "C's"—caution, care, as well as cutting. You will also agree that before any abdominal operation is undertaken a vaginal examination, a rectal examination, or both, should invariably be made.

In general terms, these acute conditions may be grouped as follows:

- 1 Hæmorrhage, a concealed hæmorrhage
- 2 Acute infections, usually of the uterus, the Fallopian tubes, or the appendix
- 3 Perforation of the bowel or other hollow viscus—perforation or rupture
- 4 An acute bowel obstruction
- 5 Strangulation of any organ or neoplasm.
- 6 The passage of a ureteral stone
- 7 A uterine abortion, spasmodic dysmenorrhœa, or even a bladder retention

For the gynaecologist the most common of these are a ruptured ectopic pregnancy, an acute appendicitis or salpingitis, a uterine infection, strangulation, thrombosis, or an ovarian cyst, or uterine fibroid with a twisted pedicle.

Speaking in a general way for all these conditions, some of them are at once recognizable—he who runs may read—while others require a most painstaking differentiation.

May I first make two pleas of a preliminary character? The first concerns the wisdom of a careful case-history, for in many of these conditions the previous history, or the story of the onset, may afford the clue. Sir James Mackenzie pointed out that in difficult cases the diagnosis frequently depends more upon an exact history than even upon a careful examination. My second plea is always to pass a catheter, and to examine the resulting urine.

I shall now discuss in a general way the various signs and symptoms of these acute conditions.

Pain is always the outstanding symptom. It may well be defined as Nature's expostulation to an injury, and its function is a protective one. La Rochefoucauld has told us that pain is the greatest liar in the world, but it is wise not always to believe this. At times it is a liar, and so for the matter of that are all men, and a few women, but I believe it is wise to take the following advice: "Never open the abdomen for pain only"—for pain only and with no accompanying signs or symptoms.

The most important sign, perhaps, is the face—the abdominal face—the facial expression, and this never lies. So often it is the anxious peritoneal face, apprehensive. In hæmorrhage it is pallid, often waxy, and the muco-cutaneous line of the lip is unduly sharp and pronounced. There is the grey ashen face of shock, and the flushed or cyanotic face of a severe toxæmia. The severity of the lesion can often in this way be immediately inferred.

And there is the attitude of the patient, her decubitus and her mobility. If the lesion be

* A paper read in the Section of Obstetrics and Gynaecology at the Annual Meeting of the British Medical Association, Cardiff, 1928.

† Reprinted from the *Brit M J*, 1928, II, 475.

acute and intraperitoneal, the patient lies invariably upon her back, and with her knees flexed. Any movement is a torture. On the other hand, if the patient moves readily, and turns easily on her side, there is no grave lesion within the abdomen. I have often found this test of asking the patient to turn over on her side of great service.

So far, you will observe, I have not mentioned either the temperature or the pulse rate. I shall refer to them later in their special place. Let us now consider the three commonest of these lower abdominal conditions. These are hæmorrhage, acute infections of the appendix or Fallopian tube, and a strangulation or thrombosis of a pelvic organ or neoplasm.

1 HÆMORRHAGE

The first of these is hæmorrhage. The common site, of course, is a ruptured tubal pregnancy. A severe hæmorrhage may arise, however, from other situations—for example, from a ruptured Graafian follicle. Three years ago Primrose of Toronto reported six such cases. I have met one in my own practice, and there was a large loss of blood. Again, a varicocele may rupture, and a uterus ruptured during labour, or perforated even by a sound or curette, may lead to a severe intraperitoneal hæmorrhage. The history here is all-important.

Usually the condition is that of ectopic pregnancy. As you know, the history of the pregnancy, the amenorrhœa, is often indefinite. Rupture occurs usually between the seventh and the twelfth week, and this rupture may be large or small. The dangerous situations are the isthmus and the cornu of the uterus. If large, the hæmorrhage is usually severe—the cataclysmic case with pallor, subnormal temperature, rapid and thready pulse, an-hunger, cold and clammy extremities. The abdomen is tumid and tender, frequently tympanitic, for the bowel floats, the blood has a high specific gravity. The pouch of Douglas may be full and depressed, and a feeling of crepitation may be present as the finger breaks the blood-clot. There is frequently the history of a dagger-like thrust of pain, with immediate faintness or collapse. A uterine trickle of blood is often manifest, together with rectal tenesmus, and some bladder strangury. In these severe cases the diagnosis is easy, and does not require the taking of a hæmoglobin index. The abdomen should be opened at once, and venous transfusion, of citrated blood or a glucose saline, carried out.

It is well to remember that if such a patient survive and be not seen till the fourth or fifth day she may present all the signs and symptoms of a widespread peritonitis—namely, fever, a rapid pulse, a distended abdomen with paralytic ileus, regurgitant vomiting, with a marked leucocytosis—the picture of late bowel obstruction.

In a so-called chronic case—the “leakers”—while the diagnosis is less urgent, it is sometimes more difficult to make. There is the history of repeated attacks of sharp, lancinating pain in the lower abdomen, an interval of twenty-four or forty-eight hours, or even some days, between them, slight uterine hæmorrhage, no marked fever or great disturbance of pulse rate, a lateral mass on one or other side of the uterus, increasing rapidly in size. Mark such a case. If a decidual cast is shed from the uterus—this occurs in only about 20 per cent of the cases—the diagnosis is clear.

There is in these cases a degree of anæmia, there is often a marked leucocytosis (De Quervain contends that a leucocytosis of 20,000, where signs are slight, points to a hæmorrhage rather than to an inflammation). A hæmoglobin index is of small value. Two years ago the hope was expressed that a low and falling index would reveal a concealed hæmorrhage. Unfortunately, this is not so.

We rely in these cases upon the history—the recurrent attacks of pain, the uterine bleeding and mass, at first lateral to the uterus, which increases rapidly in size. It is always well to bear that in mind. If in doubt, an exploratory colpotomy is the indication, and at once settles the matter. If blood is found, the abdomen should be opened from above and the tubal sac removed.

2 ACUTE INFECTION OF THE APPENDIX OR FALLOPIAN TUBE

The second common condition is an acute infection—an infection of either the vermiform appendix or the Fallopian tube. The distinction between these two infections is all-important, for an inflamed appendix should be at once removed, certainly within the first twenty-four hours, while to open the abdomen for an acute salpingitis is nothing short of a disaster.

The inflamed appendix we all know, with its more or less definite syndrome, outlined first by Reginald Fitz, and its surgical treatment indicated by Charles McBurney of New York. Professor Wilkie of Edinburgh emphasizes an important pathological and clinical distinction. He says

‘There are two main types of acute appendicitis (a) the one infective, an organismal invasion of the lymphoid tissue, the inflammatory type, here there is pain, more or less continuous, but not severe, fever, increased pulse rate, localized tenderness, and a marked leucocytosis, and (b) the obstructive type, fecal concretions often present, blocking of the circulation, and sudden gangrene, and perforation. Here the pain is intense and spasmodic, the fever is slight, the pulse is often rapid—the abdominal facies—and no great increase in leucocyte count.’

These are two main divisions, and I think they are well founded.

had a long and rational tradition behind it. As an art medicine had made great progress even before his day. Great minds had been studying the problems of Nature and of men long before Hippocrates, but he seems to have gathered all that was sound in the past history of medicine, his influence tended to the acquisition of all that was new and valuable, and to the casting off of all that was useless and superstitious. Hippocrates was called "the Father of Medicine," not altogether for his discoveries but because he laid down the principle on which that art was founded. In order to appreciate what he did, it is only necessary to glance at Babylonian and Egyptian medicine, or to become acquainted with the many systems common in his time. He rejected all that was useless, and founded a system based on reason and common sense. He recognized that diseases are part of the processes of Nature, that there is nothing divine or sacred about them, he was the first to recognize the healing powers of Nature, and was a great advocate of rest, pure air, exercise, and proper diet. He was a keen observer, and an active physician. He used few drugs, but placed his confidence in the restorative powers of Nature. The great contribution of Hippocrates to medicine was the art of careful observation.

One of the first medical schools of antiquity was established at Cos, an island of Greece, and here in the health temple Hippocrates practised the art. He decided that all diseases are abnormal natural conditions. He found that Nature alone often terminates disease and works a cure with a few simple medicines, and often enough with no medicine at all. The Greek health temples were quiet retreats where the sick, exhausted, and convalescent might gain the benefits to be obtained from pure air, fine scenery, sunlight, and regulated life. They were not unlike our modern sanatoria, and it is likely that cases of tuberculosis were benefited at such places. The Asklepieion or health temple in which he laboured was situated about two miles from the sea, at a point where the mountains rise gently from the gradual slope of the plains. The environment was both beautiful and exhilarating. A group of noble buildings erected in the unequalled architecture of Greece took nothing from Nature, but made her resources better available for man. Here the foundations of modern medicine were laid, here the modern process of careful record, case-taking, bed-side instruction and clinical lectures were practised, much in the manner in which we see it to-day. The methods of Hippocrates have formed the basis of many departments of modern advance. His dietetic principles, especially in fevers, are substantially those of the present day, and in many ways we have returned to his simple and natural methods of treating disease.

For sixteen centuries the civilized world thought that to retain health periodic bleedings were necessary, but for the last two centuries we have gradually been getting back to the teach-

ing of the great master. We have discovered that the best results are obtained when we leave something to Nature.

Modern medical science includes bacteriology, chemio-therapy, and many other things which Hippocrates never thought of, and we would be foolish to abandon any one of our modern discoveries which go to make medicine what it is to-day, yet in some respects we might do well to take a glance back at Hippocrates. We in our age are apt to lay too much stress on bacteriological findings, and at the same time pay too little attention to the more vital part, the dissociation of the functional unity of the whole body. Unlike Hippocrates, we forget the human organism in our zeal to find out all about the enemy attacking that organism. It might be well at times to pay a little less attention to bacteria, and to give more thought to the raising of the individual immunity, both by artificial and by natural methods. We have learned that the invader finds it hard to gain a foothold when the defences are well organized, he flourishes when these are weak or temporarily inadequate. The Greeks believed in Nature as the healer of disease. They believed that human bodies are and normally remain in a state of health, and that on the whole they tend to recover from disease. In favour of this belief is the fact that there are not more than two or three microbic diseases in natural conditions, and there are no constitutional diseases in the system of wild Nature.

Modern medicine may be truly described as in essence a creation of the Greeks. They gave us our first start in rational medicine. But for ancient Greece the art of medicine could not have advanced as we see it to-day. It is hard to imagine what the state of medicine would be to-day without the works of these great men. The Greeks were the beginners of nearly everything, they were creators in the true sense of the word, and as no other people have been. The small country of Attica has given an art which all the world since has not surpassed. We are apt to wonder at times what these great intellects would have accomplished if their labours had been conducted under the same advantages which we in our time have the good fortune to enjoy. Handicapped as they were, in many departments they were unsurpassed until the nineteenth century. They were not only successful practitioners of medicine, but they were also advanced in the art of surgery. Descriptions are found in the Hippocratic writings for such surgical procedures as opening the chest for empyæma, and for trephining the skull in cases of fracture, two important operations of modern surgery. These operations, we are told, were often successful, for they were performed with skill and conducted in the pure air of the islands of Greece, far from the crowded centres, where the natural conditions were at their best. Many have wondered why the Greeks having achieved so much did not achieve a little more and antici-

pate modern science. One reason is that they were handicapped by the lack of the microscope, and other instruments of modern research, another is that Greek public opinion was hostile to dissection of the human body. It is the wonder of our age that the physicians of antiquity, though ignorant of the nature and but dimly aware of the existence of infection, could have accomplished so much. Without dissection, without any experimental physiology or pathology, and without any instrumental aid, the ancient Greeks advanced the knowledge of the cause of disease as far as it is conceivable that men in their position could do it. We thus come to realize the wonderful genius and vitality of mind of those whose works still live after twenty-five centuries, and the thought comes to our minds that it would be a great loss to the Medicine of our day if we were to forget the works of these great men. While we are employing our modern methods and testing out our present day inventions, let us at times look back to them, it may be that even yet they have something to give that might be useful to us. We do not realize how difficult it was for these great intellects, living in a world of superstition and traditional beliefs, to rise above them and yet it has been stated that the period which intervened between the birth of Pericles and the death of Aristotle is undoubtedly the most memorable in the history of the world with regard to its influence on the subsequent destinies of civilized man. In the centuries from 500 to 300 B.C. the little barren country of Attica produced twenty-five illustrious men, a greater number than has ever been seen in the whole world in any two centuries since that time. It has been a severe misfortune to humanity that the high Athenian breed decayed and disappeared, for if it had maintained its excellence and had spread over the earth it is hard to imagine what great things it would have accomplished for the good of human civilization.

In the glorious days of Pericles the Greeks were remarkable for their constancy of purpose, and the steadfastness of their ideals. Their business was to carry everything they undertook forward to perfection, their aim was to lead the mind of man toward a knowledge of the truth, to spread sound and healthy ideas, to draw human beings from the paths of prejudice and passion, and to make reason the supreme guide to public opinion. The idea of service to the community was deeply rooted in the Greeks. Their aim was to be useful, to be helpful. The aim for the enrichment of life was exhibited in them as in no other people.

Medicine among the Greeks was a progressive study for a far longer period than has been the case in the Western world. Greek medicine first took on a rational spirit with the Ionian and Italo-Greek philosophers at the beginning of the sixth century B.C., and continued to make progress until the death of Galen at the beginning of the third century of the Christian era. It

thus lasted eight hundred years. Our own system of scientific medicine has only lasted three centuries, at most, less than half the time that Greek rational medicine endured.

The earliest works that have come down to us are medical in character and bear the name of Hippocrates. The noblest expression of early Greek medical science is to be found in the so-called Hippocratic collection, which contained much material of the most scientific type. The greater part of Greek medical writings was founded on a rational basis. They endeavoured to explain the origin of disease on rational grounds and to apply remedies when possible on a reasoned basis, and, despite serious and irreparable losses, we are still in possession of some of the finest products of the Greek medical intellect. Practically all the works of ancient medicine were produced by Greek physicians. There are said to be fifty-three works in all in the famous Hippocratic collection, but of all these works not one can be definitely stated to have been written by Hippocrates himself, the books which compose this collection were probably written by different authors at dates widely separated from each other. The *Aphorisms* is the most famous book associated with the name of Hippocrates, probably the greatest medical work ever written, and is the most likely of all the collection to have been written by the "Father of Medicine" himself.

The works of Hippocrates, and later of Galen, formed the main medical legacy of Greece to the world. Galen, like the great master, was a voluminous writer. His works alone form about half the mass of surviving Greek medical literature. They cover every department of medicine, anatomy, physiology, pathology, medical theory, therapeutics, as well as ethical medicine and surgery. Galen's views of disease in general are those of Hippocrates, but in treatment he differed, for he placed great confidence in drugs. He was the greatest biologist of the late Greek period, perhaps the greatest of all time. His views prevailed in medicine until Harvey and even later. There is no ancient physician in whose writings are contained so many indications of modern methods of research. His knowledge of the heart and arteries was such that it is difficult to understand how he missed discovering the circulation of the blood. All through later antiquity and the Middle Ages the science of medicine was based on the writings of Hippocrates and Galen. With the death of Galen in the second century of the Christian era the creative period of the Greek medicine terminated, and for more than a thousand years the wonderful accomplishments of the Greeks were almost forgotten.

In the beginning of the Christian era Galen and Celsus flourished. These two famous men were educated at Alexandria. In their medical practice they both took advantage of the curative powers of the sun, but after them all persons were treated alike in physical and intellectual

night, and for a thousand years the practice of medicine was but a corrupt imitation of the teachings of the great master. The wisdom of the Greeks was in this age considered foolishness, knowledge other than that which made a man wise unto salvation was considered useless. With the advance of the sixteenth century the western world again turned its eyes to the old Greek intellectuals for instruction, and at this time the works of Aristotle and Galen became the great stimulus to the foundations of a new biological science. It is now recognized that Aristotle was one of the very greatest investigators of living Nature, he was perhaps the greatest naturalist of antiquity. His biological works excited little interest during the Middle Ages, but from the sixteenth century on they have been closely followed by naturalists. He was always found in the van of progress. For two thousand years, and throughout all lands, men have come to him and found information. While the western world sat in darkness, Arab and Moor, Syrian and Jew cherished his books. The oldest of the universities were based on his teaching and his influence still remains. It is said that no man has ever swayed such an intellectual empire as he in logic, metaphysics, rhetoric, physiology, ethics, poetry, politics, and natural history, in all a creator and in all a master. So far as we know, there was no biology worth looking at before him. The history of the human mind offers no parallel to his career, and it is the universal wonder how one man could have accomplished so much.

The activities of the Ancient Greeks are for the most part imperishable, their works are still with us, and their spirit is eternal. During the last six thousand years we have changed our form of belief, we have changed our form of clothing and our dwelling-places, but in brain and body we have changed only in minor details. We are in advance of the ancient Greeks in many ways, but yet there still remains a world beyond our senses of which we can form no conception.

DR. ALEXANDER GORDON AND DAUGHTER

By W. H. HATTIE, M.D.

Halifax

Every week "An Occasional" contributes to the *Acadian Recorder* a delightfully gossipy letter dealing with the early days of Halifax. In a recent issue he reminds us, in a brief reference, of the presence in Halifax, a century and a quarter ago, of a Dr. Gordon, whose own career was not marked by conspicuous success, but whose daughter was destined to a somewhat romantic life. What follows has been prepared from the scanty material available to the writer, in the hope that it may interest readers of the *Journal*.

Alexander Gordon, a native of Aberdeenshire, came from Scotland to Charlottetown, P.E.I. in 1785, and was attached in a medical capacity to two companies of the Black Watch, then stationed at the island capital. For services rendered during the American Revolutionary War, he was given a grant of land at Charlottetown. Seemingly, he was a rather dashing fellow, fond of dress and display. He made a successful attack on the heart of Margaret Patterson, daughter of the then governor of the colony, and took her as his bride early in 1791. Four children issued from the marriage, of whom Margaret, the last to be born, gained no inconsiderable celebrity.

Gordon was at least a wee bit reckless, and became so involved financially that all his property was seized for debt, and he moved with his family to Halifax, soon after the beginning of the last century. A little later he received an appointment as apothecary to the garrison at Halifax. Within a short time he was charged with an offence for which he was court-martialled and deprived of rank and pay for six months. Before the expiration of this time the strength of the garrison was reduced, and Gordon's pay was cut in half. This was quite insufficient for the maintenance of his family, so he decided, in 1803, upon a visit to his old home in Scotland, in the hope of disposing of a little property he held there and possibly of obtaining some assistance from relatives. Acting promptly on this decision, he took with him his two daughters, Margaret and Mary, to place them with his sister, Mrs. Usher, of Kirkcaldy, a widow without children and with little means, in order that they might come under the tuition of Edward Irving, a famous teacher with whom Thomas Carlyle later became associated. Gordon died during the passage, leaving his family in wretched circumstances.

The fatherless little girls were in time placed in accordance with Gordon's intentions. A small annual grant was made to them from the "Compassionate Fund" and thus gave the girls and their aunt, Mrs. Usher, a combined income of about £45. Mrs. Gordon supported herself and her two boys for a few years, when she married Dr. Guthrie, an army surgeon.

Despite her straitened circumstances, Mrs. Usher managed to have her nieces benefit by the instruction of Irving, the Kirkcaldy schoolmaster. Margaret proved to be an exceptionally apt pupil and won Irving's admiration. When Carlyle went to Kirkcaldy, he promptly fell in love with Margaret, whom long afterwards he described (*Reminiscences*) as "of the fair complexioned, softly elegant, softly grave, witty, and comely type," with "a good deal of gracefulness, intelligence, and other talent." Other references to his first love are to be found in Carlyle's writings, and it is generally believed that the original of "Blumine" (in *Sartor Resartus*) was none other than Margaret Gordon.

There is good evidence that Margaret admired

and was fond of Carlyle, but, in all probability, she was already engaged to Alexander Bannermann, of Aberdeen, to whom she was distantly related and to whom she became married a few years later. In 1851 Bannermann was knighted, and appointed to the governorship of Prince Edward Island, and in the following year Lady Bannermann returned to her native province, after an absence of just half a century, to grace the Government house which her mother had

left as the bride of Dr Gordon. A few years later Sir Alexander Bannermann was transferred to the governorship of the Bahamas, and subsequently to that of Newfoundland. Lady Bannermann was thus brought into contact with many eminent people, upon all of whom she made a deep impression by her learning, charm of manner, and sweetness of disposition. She died in London in 1878, at the age of 81 years.

Special Correspondence

The London Letter

(From our own correspondent)

The arm-chair critic is undoubtedly getting alarmed at the growth of what he calls bureaucratic medicine, and the flow of reports from Government offices on health matters, with their talk of "norms" and "data", is certainly increasing, while enthusiastic young men in the public health services are inclined to sneer at clinical medicine. All this is no doubt the inevitable accompaniment of a revolution, for a revolution is certainly in progress, and Sir George Newman, the Chief Medical Officer of the Ministry of Health, is one of the leading conspirators, with "prevention" as his pass-word. These remarks are suggested by the Annual Report for 1927 on "The State of the Public Health." In the old days such reports dealt characteristically with statistical studies of death and the revolution is seen in the proportion of the volume now devoted to the living. It is true that an infantile mortality rate of 70 per 1,000 births is mentioned but that is surely a figure of which as a nation we can be proud, our pride being tempered by the fact that puerperal mortality shows no decline and the death rate of infants under one month still remains high and shows no diminution during the last five years. Dealing with the living, the report emphasizes the value of artificial immunization against diphtheria (although the London County Council still refuses to adopt it), and mentions the increased use of scarlet-fever antitoxin. Tuberculosis receives very full consideration, especially as regards treatment and the use of B.C.G. This vaccine is discussed, with guarded conclusions, pending further investigations.

Sir George Newman lays down the basic principles of a sound national system of preventive medicine as collection of data, establishment of normality, investigation of the character and incidence of disease, and the national organization of health services. Such is the revolutionary creed, but the arm-chair critic may prefer to be allowed to die quietly with his bottle of medicine by his side.

It is most awkward to be a lunatic or a

mentally defective person these days, for the chances are that institutional treatment will be very difficult to obtain unless one is a rich lunatic. The shortage of accommodation for mentally diseased patients is very serious and rightly occupies an important position in the report for 1927 by the Board of Control. The number of patients resident in county and borough mental hospitals increases on an average by approximately 2,500 every year while the number of vacancies is obviously decreasing. At the moment only two local authorities are building new institutions while a large colony at Epsom, famous for its mental hospitals as well as for the Derby, has been re-opened in an attempt to deal with the problem. Such a shortage of accommodation is a serious matter for "lunatics," but even more serious for "mentally defectives," who are rather in the position of being dealt with after all available room has been filled up. This is especially serious in view of the new "Mental Deficiency Act," the most important sections of which it will be impossible to administer unless prompt action is taken. On very conservative estimates only half of the mentally defective patients requiring institutional care were receiving it on January 1, 1928. Such a position is intolerable, for mental defectives are notoriously prolific and always beget defectives, becoming veritable centres of degeneracy, disease, inebriety, pauperism and crime. Mental hospitals are too busy dealing with lunatics, even if they had space to spare for mentally defective patients, and it appears a most urgent matter for the welfare of the nation that local authorities speedily found colonies and suchlike institutions for the increasing number of cases which correct administration of the Mental Deficiency Act will entail.

The Fourteenth Annual Conference of the National Association for the Prevention of Tuberculosis was held in London during last month and was notable on this occasion for the presence of Canadian delegates. It is always difficult and invidious to pick out special papers from a conference of this sort, but for a practical appreciation of the tuberculosis problem as

it exists in England and how it should be tackled a communication by the chief tuberculosis officer for the county of Lancashire, Dr G L Cox, demands notice. He emphasized first the importance of the dispensary as an organization rather than as a mere building, and he said that the commanding officer must be paid enough to be an up-to-date specialist, working whole time at his job. The dispensary unit included notification and led on to the second link in the scheme, the institutional unit. There was only too often too little institutional accommodation available and the difficulty had been met in Lancashire by providing in each dispensary area a hospital run by the consultant tuberculosis officer and his assistants. The third link was after-care and education where the social worker was of great value. Discussion took place on Dr Cox's paper, and it was noticeable how prevention was kept very much in the foreground with a *leit motif* of housing as the first problem to be solved.

ALAN MONCRIEFF

London, November, 1928

The Edinburgh Letter

(From our own correspondent)

Dr W T Ritchie, the new incumbent of the Chair of Medicine in the University, delivered his inaugural address on Thursday, October 4th. After a generous tribute to Dr Gulland, the retiring Professor, Dr Ritchie referred in turn to the various distinguished men who had occupied the Chair since its foundation in 1685. The first three professors of medicine in the University were Sir Robert Sibbald, Dr James Halket and Dr Archibald Pitcairne. Pitcairne was the most renowned physician of his day in Western Europe, and may be regarded as the founder of the Edinburgh Medical School. He was professor at Edinburgh and at Leyden at the same time. An ardent Jacobite, on the death of Claverhouse at the battle of Killbuck, he composed an epitaph to the memory of that devoted loyalist. In 1724, William Porterfield was selected by the Town Council to fill the Chair. His tenure was very brief and when the medical faculty was founded in 1726, Drs Sinclair and Rutherford were appointed professors of the Theory and Practice of Medicine. Rutherford was the maternal grandfather of Sir Walter Scott. He was succeeded by Robert Whytt, who was followed by John Gregory. The next professor was the illustrious Cullen. At his death in 1790, his place was taken by James Gregory, whose father had previously held the Chair. Gregory's claim to fame can only be regarded as a little less than those of Pitcairne and Cullen, though now he is chiefly enshrined in

our memories as the inventor of his rhubarb powder. James Home, who hardly lived up to expectations, followed and in turn gave place to William Pulteney Alison, the brother of the historian. The next to occupy the Chair was Thomas Laycock, an Englishman, who was mainly interested in nervous and mental disorders, working on lines similar to Charcot and other French physicians. Sir Thomas Grainger Stewart followed in 1876, and so, by John Wylie and George Lovell Gulland, we come to the present day. The appointment of a new professor to the Chair of Medicine in Edinburgh is a matter of first class importance. A survey of this galaxy of notable names will show that the new incumbent is succeeding to a heritage of fame.

Under the auspices of the National Association for the Prevention of Tuberculosis an extensive campaign of popular education is being carried on all over Great Britain. Three medical commissioners with special experience of the disease have been appointed, and are now touring the country, giving lectures and demonstrations upon every aspect of the subject. In Scotland, Dr Hailey Williams has held meetings principally in the Highlands and Islands, which for many reasons have an unenviable amount of the disease. During the past year over two hundred meetings have been held, some of them in the very remote parts of the Outer Hebrides. An interesting series of cinematograph films is shown to the people, and special competitions are held among the school children, with prizes for the best essays upon the subject of the lecture. In spite of the prejudices of the people and their conservative habits in regard to the routine of their daily life, the large attendances at the lectures have been an encouraging feature of the tour. The Scottish Highlander is well known for his intelligence. He is well able to follow a case when it is put to him, and there is reason to believe that the Association's campaign may be the beginning of new things for those who live in those remote districts. As a social problem tuberculosis is of comparatively recent origin in the Highlands. In many places there are men still living who can remember the first cases in their own village. It has all the features of a new infection spreading in virgin soil. Contemporaneous with the introduction of tuberculosis there has come a change in the nutrition of the people. Fish no longer forms the main portion of the people's food, and the milk supplies in many areas are very limited. Oatmeal, the old fashioned dish of the Highlander, now comes from the cities of the South, and white bread and tea take an undesirably prominent part in his dietary. There are signs that these facts are being realized by the more thoughtful

observers and it is the Association's policy to stimulate the growing desire for new conditions of life. The Chairman of the Executive Committee, Sir Robert Philip, whose pioneer work in the prevention of tuberculosis is so widely known, is responsible for this side of the Association's work.

For a number of years there has been only one crematorium in Scotland. This is situated in Glasgow and the intervening miles have interfered with its frequent patronage by the people in Edinburgh. We are however no longer to be behind hand in this alternative expedient for the disposal of our dead. The Edinburgh Cremation Society have now acquired an option from the Town Council to purchase the house and grounds of Easter Warriston as a situation for the erection of a crematorium. This house stands on a site immediately to the east of the former residence of that Lord Warriston who was the inveterate enemy of Montrose. He was a member of the Cromwell House of Peers, and was singled out at the Restoration and hanged at the Mercat Cross (1663). King Charles II is reputed to have been particularly desirous for the execution of this "canny lynx-eyed lawyer and austere Presbyterian zealot." The house is to be adapted for the use as a chapel and for incinerating rooms. The grounds are spacious and well laid out, and lie within easy reach of one of the largest of the cemeteries in the city. The town council of Aberdeen are also con-

sidering the question of establishing a municipal crematorium in or near the city.

A well known Scotsman, and a notable product of Edinburgh Academy and University, has passed away, through the death of Professor Diarmid Noel Paton, F.R.S., the distinguished Professor of Physiology at Glasgow University. In 1886 he became Lecturer in Physiology at Surgeon's Hall, Edinburgh, and three years later was appointed Superintendent of the Research Laboratory of the Royal College of Physicians, where he succeeded the late Sir German Sims Woodhead. In 1906 when Professor J. G. McKendrick retired, he was translated to the Glasgow Chair of Physiology. There during twenty-two full years of service at Gilmorehill he inspired his students by the enthusiasm of his teaching and his interest in all medicine. The eldest son of the late famous printer Sir J. Noel Paton, he inherited artistic gifts which he used to full advantage in illustrating his lectures. Some of us in Edinburgh remember him not only as a famous scientist and brilliant teacher, but also as one of a distinguished band, which thirty years ago made an annual golfing holiday at the New Year to Machrihanish in Argyllshire, and which included D. J. Cunningham, John Chiene, Robert Muir, Ralph Stockman, G. A. Gibson, Sir James Hodsdon, Sir Edward Sharpey-Schafer, and F. D. Boyd.

GEORGE GIBSON

23, Cluny Terrace, Edinburgh

Medical Societies

ONTARIO MEDICAL ASSOCIATION

ANNUAL MEETINGS OF DISTRICT SOCIETIES

District Number One

District Number One met in annual session on October 26th, with an attendance of 160. The District Counsellor, Dr. J. D. Curtis, of St. Thomas, presided.

The first item on the program was a heart clinic by Dr. John Oille of Toronto. Following this, Dr. Omar Wilson, of Ottawa, conducted a skin clinic. The two clinics proved intensely interesting, as was also the address on "Goitre," given immediately afterwards by Dr. R. V. B. Shier, of Toronto.

An address by Dr. E. A. McQuade, of Tinton, President of the Ontario Medical Association, was delivered in the evening. Dr. Robert T. Noble of Toronto, the official representative of the College of Physicians and Surgeons of Ontario, gave a talk on the Medical and Narcotic Drug Acts, setting forth

some of the difficulties which have arisen out of their attempted enforcement, and affording an opportunity of clearing away many misunderstandings. Following discussion on the Narcotic Drug Act and the care of drug addicts, a resolution was passed memorializing the provincial government to provide adequate hospital accommodation for all such, and also to make provision for their committal thereto.

The closing address was given by Dr. T. C. Routley, Secretary of the Ontario Medical Association, calling attention to several matters affecting the welfare of the medical profession of this province.

A brief business session was held at which Dr. J. D. Curtis, of St. Thomas, was unanimously nominated for Counsellorship of the district. The following Vice-counsellors were elected for the ensuing year: Dr. F. W. Luney, London, Dr. G. F. Lewis, Windsor, and Dr. J. A. Bell, Sarnia. A very cordial invitation was extended by the medical men of Windsor for the district meeting to be held in that city in 1929.

District Number Three

District Number Three, comprising the counties of Bruce, Grey and Dufferin, met in annual session at Owen Sound, on October 10th, with an attendance of about sixty doctors and forty ladies. The Counsellor, Dr Malcolm Stalker, of Walkerton, was in the Chair.

The program commenced in the afternoon with an address by Dr H K Detweiler, of Toronto, on "Diagnosis of diseases of the blood and blood-forming organs." This was followed by an address on "The goutie problem in general practice" by Dr Roseoe Graham and a talk on "Polymyositis" by Dr Geo F Boyer, of Toronto. During the afternoon, the ladies enjoyed a game of golf and afternoon tea at the golf club, later joining the doctors at dinner in the Y M C A. Following the dinner, Dr E A McQuade of Trenton, President of the Canadian Medical Association, gave a brief address on matters pertaining to organized medicine. Dr Robert T Noble gave an interesting review of the Medical and Narcotic Drug Acts, stressing some of the many difficulties which have arisen out of their attempted enforcement. Considerable discussion followed with reference to the necessity of some provision being made for the care of drug addicts, and a resolution was heartily endorsed by all present memorializing the provincial government to provide adequate hospital accommodation for such cases, and also to make provision for their committal thereto.

The closing address of the evening was given by Dr T C Routley referring to many points of interest to the medical profession of the Province of Ontario at the present time.

A short business session was held at which the following nominations were made for Counsellor of the District: Dr S T White, Orangeville, Dr T H Sneath, Brimore, and Dr Malcolm Stalker, Walkerton.

The following were elected Vice-counsellors for the ensuing year: Dr T H Sneath, Brimore, P F McCue, Walkerton, and H W Baker, Grand Valley. It was decided that the next annual meeting of the district should be held at Orangeville.

District Number Four

The annual meeting of District Number Four was held in the Hamilton General Hospital on October 25th, and was one of the best attended and most enthusiastic meetings ever held in this district, there being 210 members of the profession present from the city and surrounding counties.

At 9:30 a.m. Professor A M Shipley, of the University of Maryland, Baltimore, conducted a clinic on head injuries and surgical condi-

tions of the chest, after which the following excellent papers were contributed by three Hamilton men: "Scoliosis," by Dr Ernest Jones, "Congenital hypertrophic pyloric stenosis," by Dr Frank Boone, "Bronchial asthma," by Dr William D Swan. Dr Campbell Howard, of Monticall, then conducted a clinic on typhoid fever and on rheumatic fever and its complications.

At 12 o'clock, those present were entertained to luncheon at the hospital, as guests of the Board of Governors, after which Dr T C Routley gave an address in which he referred to many matters affecting the welfare of the medical profession of Ontario.

In the afternoon, Dr Harry Whitlock, of Hamilton, gave a paper on "The acute ear," followed by an address by Dr Otto W Neimeier on "The open reduction of fractures." Dr A M Shipley, of Baltimore, then gave a clinic on "Genito-urinary diseases in older men," after which the following papers were read by local men: "Irregular tachycardia," by Dr Richard Weaver, "Pituitary tumour," by Dr Roswell Park. Following this, Dr Campbell Howard gave a second clinic, this time dealing with primary and secondary anaemia, Banti's disease, and purpura hæmorrhagica.

In the evening an address was given by Dr E A McQuade, of Trenton, on matters pertaining to medical organization.

Dr Robert T Noble gave a talk on the Medical and Narcotic Drug Acts, dealing with some of the difficulties which have arisen out of their enforcement.

This was followed by a very excellent address by the Hon W H Price, Attorney-General of Ontario, on "The medical profession and the law."

At a short business session, Dr J H Holbrook of Hamilton, was nominated for the Counsellorship of the district, and Dr W K Colbeck, of Welland, was elected Vice-counsellor.

This completed the program of one of the best district meetings ever held in the province. The clinics conducted by Drs Howard of Monticall and Shipley of Baltimore were extremely interesting and very highly appreciated, as were also the cases presented by members of the district.

District Number Five

A meeting of District Number Five, comprising the counties of Ontario, Simcoe, Peel, and York (including the city of Toronto), was held at Barrie, on October 31st, under the auspices of the Simcoe County Medical Association. This was the first occasion that this conference has been held outside the city of Toronto and many of those present expressed pleasure with the results of the experiment.

Dr G D McLean, Woodbridge, Counsellor, presided. The first speaker in the afternoon was Dr Robert T Noble, who gave a very interesting review of the Medical and Narcotic Drug Acts, and outlined many of the difficulties arising out of their attempted enforcement. After some discussion, the following resolution was directed to be forwarded to the Government from this district —

Whereas it is the opinion of this meeting that drug addicts should receive hospital care, and

Whereas there is no provision made for these in the hospitals of this Province, we would respectfully request the Provincial Government to provide adequate hospital accommodation for such cases, and also to place on the statute books the necessary legislation covering their committal thereto — Carried

The next speaker was Dr J K McGregor of Hamilton, who spoke on "Factors contributing towards reduction of surgical failures." The third speaker of the afternoon was Dr Geo S Young, of Toronto, who gave a very interesting and instructive paper on "Hypertension." He stressed the importance of watching the diastolic blood pressure.

Very interesting addresses were given in the evening by Dr E A McQuade, Trenton, and Dr T C Routley, Toronto, and were interspersed by enjoyable vocal numbers by Miss and Miss Laidman, Barrie. Mr F Krait, Barrie, pleased the audience with solos on the violin and clarinet.

After recommending that the name of Dr W A Lewis, of Barrie, be placed in nomination for Counsellor at the annual meeting of the Canadian Medical Association, and electing Dr S W Otton, of Newmarket, as Vice-counsellor of this district, the concluding speaker of the evening, Dr F S Patch, of Montreal, gave a delightfully instructive and interesting talk on "Some aspects of the prostatic problem." This was accompanied by lantern slides and the subject was dealt with in such a manner as to be fully appreciated and enjoyed by the general practitioner as well as the trained urologist.

District Number Six

The annual meeting of District Number Six, was held in Belleville on September 27, 1928. There was a large attendance of the medical men of the district, and a splendid program was much enjoyed. The day was fine, and many of the doctors were accompanied by their ladies, who were looked after by Dr Emma Commor. The meetings were held in the Hotel Quinté, commencing at 9 30 a m.

During the morning session, most interesting papers were read by Dr MacGregor, of Kingston, on "Celiac disease", Dr H B VanWyck, of Toronto, on "Toxæmias of pregnancy", and Dr F J Tees, of Montreal, on "Difficult fractures." At 12 30 lunch was served, and at the afternoon session the following addresses

were enjoyed "Some clinical problems in disease of the kidney," by Dr John A MacGregor, of London, and the "Surgical abdomen," by Dr A L Lockwood, of Toronto. During the course of the evening dinner addresses were given by Rev Dr Bishop, Principal of Alberta College, Belleville, Dr E A McQuade, and Dr Robert T Noble. The latter spoke on the subject of the Medical and Narcotic Drug Acts. Owing to illness, Dr T C Routley was unfortunately unable to be present, and was much missed by the meeting.

A resolution was passed that the Government be asked to provide facilities for the treatment of drug addicts and alcoholics.

Dr F C Neal of Peterborough and Dr George H Stobie of Belleville were re-elected Counsellor and Vice-counsellor for District Number Six for the ensuing year.

District Number Seven

On Wednesday, October 31st, the annual meeting of District Number Seven was held in Kingston, with an attendance of 125 medical men from Kingston and surrounding counties.

The morning session, which was held in the General Hospital and was presided over by Dr L J Austin, consisted of a number of very interesting clinical cases presented by members of the district.

The afternoon session opened with an address by Dr Roscoe R Graham of Toronto on "Surgical aspects of thyroid disease." This was followed by an address by Dr T C Routley, touching on many matters of interest to the medical profession at this time. Dr I M Rabinowitch, of Montreal, then gave a paper on "Diabetes." The last address of the afternoon was given by Dr W P Tew, of London, on "The management of certain obstetrical difficulties."

A banquet was served at 7 30, followed by an address by Dr E A. McQuade, on matters pertaining to medical organization.

Dr Robert T Noble gave a brief review of the Medical and Narcotic Drug Acts, which proved very interesting to those present. Dr Noble called attention to some of the difficulties which have arisen out of the attempted enforcement of these acts. Considerable discussion ensued with reference to the care which should be given drug addicts, and a resolution was passed memorializing the Government to provide adequate hospital accommodation for all such, and also to make some provision for their committal thereto. The final address of the evening was given by Dr L J Austin, of Kingston on "The kings of France and their fatal diseases." This was very much enjoyed by all.

At the brief business session which was held, Dr L J Austin, of Kingston, was nominated for the Counsellorship of the District, and Dr

W A Jones, of Kingston, was elected Vice-counsellor for the ensuing year.

This concluded one of the most interesting and enjoyable annual meetings ever held in District Number Seven.

District Number Eight

The annual meeting of District Number Eight was held in Ottawa on October 24th. The morning session opened at 9 o'clock at the Civic Hospital, the Counsellor, Dr W S Lyman, of Ottawa, in the chair.

Dr F H MacKay, of Montreal, was first on the program, with a paper on "Poliomyelitis." This was followed by an address on "Thrombo-angitis obliterans" by Dr Donald A Hingston, of Montreal.

At 1 o'clock, luncheon was served at the Chateau Laurier. During the luncheon hour, a short business session was held at which Dr W S Lyman, of Ottawa, was nominated Counsellor and Dr J C Woods was elected Vice-counsellor for the ensuing year. Immediately following the luncheon, Dr E A McQuade gave a brief address, after which Dr Robert T Noble, gave a review of the Medical and Narcotic Drug Acts, stressing some of the difficulties which have arisen out of their attempted enforcement. This was followed by a talk by Dr T C Routley, touching upon many matters of importance to the medical profession at the present time.

At 3 o'clock, the meeting adjourned to the General Hospital, where an address on "The treatment of headache" was given by Dr Wilber G Penfield, of Montreal, followed by a paper by Dr H B Cushing, of Montreal, on "The prevention and treatment of scarlet fever."

This was one of the best attended meetings ever held in this district, there being 175 members present from Ottawa and the surrounding counties. That the very excellent papers were thoroughly enjoyed by those who heard them was evinced by the splendid discussion which followed. It was the unanimous opinion that the meeting was a decided success, both from the social and scientific point of view.

THE PRINCE EDWARD ISLAND MEDICAL SOCIETY

Dr A Stewart, surgeon, and Dr R R Struthers, paediatrist, both of Montreal, delivered the extra-mural lectures before the Prince Edward Island Medical Society on October 24th.

Dr Stewart dealt in a very interesting and lucid way with the difficult subject of pulmonary suppuration. The various methods evolved during the past few years, such as bronchoscopy, for diagnosis and drainage, phrenic evulsion, thoracoplasty and the cauterization lobectomy have placed in the hands of the skilled surgeon

a varied and scientific armamentarium for attacking these hitherto unsatisfactory problems.

His afternoon paper dealt with diseases of the anus and rectum. He emphasized the importance of a careful history and physical examination, particularly digital examination of the rectum, as well as the more modern barium series and proctoscopic examination. He advocated the clamp and cautery operation for hæmorrhoids, and strongly deprecated the injection of chemicals in this condition.

Dr Struthers in the morning spoke on "Tuberculosis in childhood." He traced the tuberculosis bacillus from the time it was aspirated until it reached the tracheo-bronchial nodes, producing the usual pathological lesions, and from where it might spread by breaking into the bronchial tree, by way of the lymph channels or by the blood stream, by these latter channels, also, producing acute miliary tuberculosis with its predominant manifestation, tuberculous meningitis. The chief symptoms were fatigue, loss of appetite, weight and colour, a peculiar two-tone metallic cough and a temperature above 100° F. These were supplemented by the signs of anaemia and malnutrition, together with vertebral dullness below the first dorsal spine, x-ray evidence of enlarged tracheo-bronchial nodes and the tuberculin reaction. He had not found D'Espine's sign very useful. The bovine type, localizing in cervical and mesenteric glands, showed similar evidences of malnutrition, but milder in degree. This type caused only 10 per cent of the deaths in childhood. The treatment was that of adult tuberculosis, rest, fresh air, good food plus cod liver oil, and the quartz lamp in glandular types.

In the afternoon, Dr Struthers discussed the feeding of the normal infant. He set forth a few simple rules from which an ordinary feeding formula could be easily calculated. (1) The total fluid intake should average two and one-half ounces per pound of body weight per day. (2) The amount of milk necessary to supply the needed protein, fat, carbohydrate and salts was about one and one-half ounces per pound of body weight. (3) The total amount of nourishment in calories.

The infant's basal metabolic needs were about 27 calories. To this must be added sufficient to provide for activity, growth, etc., which brought the total up to 45 or 50 calories per pound of body weight per day. After the total fluids and milk requirements were fixed, the remainder of the caloric needs were supplied by adding sugar. At 5 to 6 months cereals and strained soups are added, and at 9 months, vegetables and additional protein in the form of hard-boiled egg and crisp bacon. Dr Struthers also discussed the usefulness of protein milk and various soured milk mixtures in the treatment of fermentative diarrhoeas.

Dr Stewart and Dr Struthers gave us material which has been of immediate value in our practice. Few lectures since the extramural courses started have been received with such enthusiastic appreciation.

T. W. McKEVIL

THE REGINA DISTRICT MEDICAL SOCIETY

On November 14th, the Regina District Medical Society, held its regular monthly meeting. This took the form of a banquet in honour of Dr M. M. Seymour, who for many years has been Deputy Minister of Public Health. Dr Gorrell, in eloquent terms, proposed a toast to the guest of the evening. He recounted very many distinguished services rendered by Dr Seymour, both as a medical practitioner and as a public health official. He also referred to the many honours which have been conferred on him. This was very ably seconded by Dr F. W. Hart of Indian Head, and was drunk amidst great enthusiasm.

Dr A. MacG. Young, General Secretary of the Saskatchewan Medical Association, brought greetings from the Saskatoon District Medical Society, and also, on behalf of the profession, spoke in terms of praise of the excellent work done by Dr Seymour, and wished him health, happiness and prosperity in his new surroundings. Dr O. E. Bothwell, district representative on the Council of the College of Physicians and Surgeons, also spoke along similar lines.

Dr W. A. Thomson, Regina, who had known Dr Seymour ever since he had come to the city of Regina recounted many of the incidents which had occurred in the last quarter of a century, and gave many personal reminiscences. Dr J. C. Black, a former assistant to Dr Seymour, also spoke briefly.

On behalf of the Regina District Medical Society, the President, Dr R. O. Davidson, in a few well chosen words presented Dr Seymour with a beautiful silver serving-tray, suitably engraved.

When the guest of the evening rose to respond he was visibly affected by the many expressions of good will to which he had just listened. He recounted his experiences from the date of his graduation, which was 1879 up to the present time. Many incidents of which he spoke were of a most humorous character, and others were of a very different order, which not only greatly affected the emotions of the speaker but also his audience. At the conclusion of his address he presented the Regina District Medical Society with a photograph of the last Medical Council of the College of Physicians and Surgeons of the North West Territories, of which he was President. In the near future Dr Seymour and his family intend to reside in Orange, California.

Dr H. C. George, then presented a very intricate and complicated case of intestinal disorder simulating typhoid fever. This evoked a good deal of discussion and was greatly appreciated by all present.

Topics of Current Interest

THEORY AND EXPERIENCE IN MEDICINE

"Sir Arthur Keith addressed the annual meeting of the Chartered Society of Massage and Medical Gymnastics, held in London on October 5th, on the conflict between theory and experience in the practice of medicine.

He began by recounting an incident in his early career, forty years ago, when, in the company of an old practitioner, he visited an upland farmhouse in Aberdeen to see a patient who was prostrate with deep-seated pain in the back. The practitioner proceeded, by dry cupping, to dilate the superficial vessels, and brought about complete relief. Here, to the young man's astonishment, science and empiricism were shown in conflict, and empiricism won, hands down. That was typical, said Sir Arthur Keith, of the conflict which had been going on in medicine for centuries. In any medical journal of any period

would be found articles in which the competing claims of science and empiricism were canvassed. It was out of such conflict that medicine advanced to higher things. Young men and women entered the profession with high resolves to make science their sole guide in practice, and soon discovered themselves involved in this conflict. The conception which he himself had formed of science at the time he entered medicine was represented by the kind of knowledge which had been revealed by Pasteur or by Koch in their respective spheres. He set out with the idea that science was creative and should always precede practice, and he had gone a long way on his medical journey before he discovered that he had formed an altogether wrong conception of science. Science performed her best service, not by moving ahead of practice, but by following in the rear. Cod-liver oil furnished a homely example, it had been used by medical

men for generations, though science found no virtue in it, and then, in modern days, came the discovery of its particular value, to justify the medical faith which had been born of experience. During the long and dry winter in Newfoundland the natives lived on salt pork, margarine, and preserved vegetables, in the spring many of them suffered from night blindness. The popular remedy was bird's liver, raw or cooked. Twenty years ago this would have been thought an example of superstition, but again science had provided the justification. Captain Cook's exacting dietetic rules for his crew, whereby the sailor who refused to eat his ration of vegetable hash suffered stripes on his bare back, were successful at the time and had since been justified by the scientific explanation forthcoming in the twentieth century. Edward Jenner found by experiment that he could confer on human beings immunity from small-pox by inoculating them with cow-pox. Jenner could not explain it in scientific terms, but the method he had employed empirically was employed afterwards scientifically by Pasteur, though science had not even yet ousted experience in treatment by immunization. Quinine, digitalis, opium, arsenic, mercury, and many other useful drugs had been brought into treatment, not as the result of scientific inquiry, but of chance discovery. The value of light as a therapeutic agency of the highest value was not a modern discovery, for there never had been a time when human beings did not instinctively bask in the sun. Science played a twofold part in medicine, sometimes moving ahead of practice (as in glandular therapy), and sometimes justifying experience, so that science and experience ultimately became reconciled. It might be said, then, that there was no real conflict, but there was real conflict between magic or superstition on the one hand and science on the other—a conflict in which there could be no compromise or reconciliation.

The body was endowed, said Sir Arthur Keith in conclusion, with certain recuperative powers, and all that science could do was to assist them. But these powers came into exercise also after the charlatan had had his innings, and for this circumstance, of course, the charlatan took the credit. There were numbers of people in this country as superstitious, in a medical sense, as the natives of Africa who believed in their rain-doctors, and when the rain came gave all the credit to the magician, while the thunder-cloud received none — (*Brit M J*, 1928, ii, 674)

MEDICINE AND FLYING

"Sir Samuel Hoare, Secretary of State and President of the Air Council, after presenting the prizes at the London Hospital Medical

College and Dental School on June 29th, made some interesting remarks on the contacts between the new profession of flying and the ancient profession of medicine. He said that there was no profession in the world which demanded a higher standard of physical and nervous efficiency than flying. As the Royal Air Force had developed, the old tests which had proved sufficient for the Army and Navy were quite out-distanced, and it was soon evident that the man who had what the insurance companies would call a first-class life was by no means necessarily a good pilot. Other tests had to be superimposed, and the medical officers of the Air Force had accordingly gone to work in a special way. Instead of merely ascertaining that a candidate for a commission was free from any obvious disability or disease, they had worked out some special tests for the efficiency and co-ordination of brain, eye, hand, and foot. Sir Samuel Hoare mentioned that a short time ago he himself went through these tests, and he was glad to report that, notwithstanding five years' work in the Cabinet, his eyesight was classed in the same category as that of Mr. Jack Hobbs, the well-known professional cricketer, who had been examined shortly before. But he was excelled by Lady Maud Hoare, who accompanied him in his flight to India and back, in respect of co-ordination of movements of hands and feet, excellences which he attributed to her habit of continual motor-driving in London. The tests applied to candidates at the medical stations were supported in a remarkable degree by reports received afterwards from the units to which the newly commissioned officers were sent. This series of tests had been developed not from theory but from practice. The men who had proved themselves to be the best pilots were taken and their qualities analysed, and the result of the analysis was made the standard for application to subsequent candidates.

Sir Samuel Hoare pleaded that the medical services of the Air Force should be considered not only as an integral part of the "new arm," but as an important branch of the medical profession. He mentioned also the services which the aeroplane itself was rendering as an instrument of first aid. During some recent military operations in a difficult mountainous region of Kurdistan, about one hundred men of the regiment fell ill of dysentery. Thanks to the Royal Air Force, every one of those men was transported with the utmost swiftness to the hospital at Bagdad—an operation which otherwise than by air would have involved days of painful journeying—where they all completely recovered. One of the principal sheiks of the desert, a man who had lived his life under similar conditions to the patriarchs of

the Old Testament, went down with pneumonia. An aeroplane was sent to his assistance, he, too, was conveyed to the hospital at Bagdad, and made a good recovery. The aeroplane, besides being an instrument of defence and of civil transport, was specially well adapted for ambulance purposes. Some of the fastest aeroplanes were now being equipped in such a way that they could easily accommodate stretcher cases, and Sir Samuel Hoare said that he himself had recently flown in one of these machines a distance of two hundred miles in sixty-eight minutes" (*Brit M J*, 1928, II, 25).

THE AUSTRIAN LIP

"In a well-known passage of his autobiography Edward Gibbon wrote 'Our immortal Fielding was of the younger branch of the Earls of Denbigh, who draw their origin from the Counts of Habsburg, the lineal descendants of Eltrico in the seventh century Duke of Alsace

The successors of Charles the Fifth may disdain their brethren of England, but the romance of *Tom Jones*, that exquisite picture of human manners, will outlive the palace of the Escorial, and the imperial eagle of the house of Austria.' Unluckily the romantic legend of the common origin of the Fieldings and the Habsburgs has been destroyed by the researches of the late Mr J. H. Round, but this noble tribute to the genius of Henry Fielding remains in untarnished splendour. The prophecy has in part been fulfilled, for although the palace of the Escorial seems likely yet to outlast many centuries, the imperial eagle has taken wing into the limbo of lost causes and has gone, as a national emblem 'for good,' while *Tom Jones* is still reprinted and delights successive generations of readers.

There is, however, a characteristic of the house of Habsburg, to which Gibbon did not allude, which seems to be as persistent as its coat of arms or its Spanish palace. This is that combination of traits of feature which is known as the Habsburg lip, from the fact that a prominent or hanging lower lip is the most obvious of the peculiarities which constitute this family type.

In an elaborate study of the heredity of the stigmata of degeneration Dr V. Galippe of Paris published in 1905 a well-documented research dealing chiefly with the house of Habsburg and its origins*. He showed that the peculiarity of the Habsburg lip depends principally on a disproportion and want of adaptation between the upper and lower jaws—that its subjects are underhung, in fact—while at the same time there is a lateral compression of the mandible which tends to render the angle be-

tween the two horizontal rami more acute than normal. This deformity French anatomists call *inferior prognathism*. It must not be confused with the prognathism which is a character of the lower races of mankind and which involves a projection of both jaws beyond the vertical line of the ideal orthognathous skull. Without attempting to follow all the footsteps of courtly genealogists who have professed to find the roots of the Habsburg family tree in the year 690, Dr Galippe goes back to the fourteenth century and begins with a traditional portrait of Ernest I, Duke of Carinthia, which he says shows inferior prognathism. This is succeeded by some 250 portraits, the series only ending in quite recent times and including the unfortunate Archduke whose murder started the world war. In nearly all these portraits, among which are included those of our Stuart kings, Dr Galippe sees inferior prognathism, in many cases where it must be confessed that a less enthusiastic observer would only see that fullness of the lips which some artists gave to their sitters as a beauty. Dr Galippe is on firmer ground when he argues that a deformity such as that shown by the Emperor Charles V has been perpetuated by the inbreeding which has been carried to such a pitch by his descendants and collaterals, although few of them showed the peculiarity in so marked a degree as he did, yet it appeared in an extreme form in the Emperor Leopold I (1640-1705), and as late as 1817 in the Archduke Albert Frederick Rudolph who died in 1864.

The basic deformity in the typical Habsburg skull is, according to Dr Galippe, a lateral compression with corresponding expansion in the antero-posterior direction causing, or at least associated with, exophthalmos. He does not mince matters in discussing the royal and noble families of Europe, nearly all of which were tainted with Burgundian blood, and, according to him, few of them of moral worth, and many of them of feeble intelligence, but after making full allowance for prejudice we must admit on the evidence that the Habsburg lip seems to be a dominant peculiarity, which crops up again and again, even among remote collaterals.

Dr Galippe shows also that a similar deformity existed independently in a marked form among the Medicis of Tuscany, although the deformity in this great mercantile family was not derived from any of the sources of the Habsburgs, it was enhanced by intermarriage with that family. It is most obvious in the portrait of Cosmo III by Westerhout, and is unmistakable in that of the first Grand Duke Francis, and in many other members of that family.

Dr Rubbrecht, of Bruges, has studied this question from a slightly different point of view—that of the connoisseur of paintings and

* *L'Hérédité des Stigmata de Dégénérescence et les Familles Souveraines*, par le Dr V. Galippe, membre de l'Académie de Médecine, Paris. Masson et Cie, 1905.

sculpture—and he published the results of his research in a beautifully illustrated work* in which he discusses all the available portraits and images of the early members of the reigning families of France, Burgundy, and Austria, and especially the collection of portraits which formed the exhibition of the Golden Fleece at Bruges in 1907, to which pictures were sent on loan from various galleries, including the Royal collection of Windsor Castle, whence came a very notable portrait of the Emperor Charles V by a Flemish master. This portrait, for the faithfulness of which there is strong corroborative evidence, shows the deformity in its most acute degree. The brother of Charles, Ferdinand I, had also a very full and typical lower lip. When it is remembered that the Emperor Charles married his first cousin, and that his daughter and her son did the like, and that such consanguineous marriages were frequent in the family, it is easy to understand the persistence of the Habsburg lip.

From his iconographical studies Dr Rubrecht comes to the conclusion that the Habsburg family inherits inferior prognathism from the royal houses of Spain and Austria, but that the large lower lip existed in the families of Burgundy and Spain before their union with that of Austria, and, further, that the lateral flattening of the skull, the long nose, and prominent eyes may be found in the ancestors of the Habsburgs in the houses of Burgundy, Spain and Austria.

To the student of heredity both these books are of great interest. It is easy to understand the persistence of a hereditary trait in a race which bred in-and-in for so many generations, but it is less easy to explain the persistent fecundity of the race under such conditions."—(*Brit M J*, 1928, ii, 763)

* *L'Origine du type familial de la Maison de Habsbourg*, Brussels. G. Van Oert et Cie, 1910.

RADIO-ACTIVE WATERS

"Dr C W Prowd, a Vancouver citizen whose reputation as a radiologist, in technical circles at least, is now nation-wide, recently delivered before the Canadian Club an address that was clearly the outcome of keen observation and quiet, sane, reflection. He has recently returned from the World Conference on Radiology held in Stockholm, Sweden, last July. Four significant thoughts stood out in strong relief and attracted the attention of his auditors. He commented on the striking fact that the very generation which first saw the scientific discovery of x-rays, the basis of the whole science of radiology, should also see a conference of twelve hundred delegates, representing all the civilized countries of the world, assembled in a

Scandinavian city to exchange ideas on the practical application of these self-same rays and of radium to modern curative art. He recounted incidents of his tour of Europe, which had been made by aeroplane, because, as he said, a careful examination of statistics showed him that this was the safest method of travel in the middle European countries. He admitted the delights and beauties of his continental tour, but added that they had been surpassed by those of the south of England when he finally concluded his anti-trip by flying from Paris to Croydon. Then, to the delight of his audience, he drew the whole chain of thought to a close by giving it as his considered opinion that the people of Vancouver need not go away from home with the idea that they can anywhere else find anything better.

Perhaps the most interesting part of Dr Prowd's address, from a purely local standpoint, lay in the emphasis he gave to the value of British Columbia's radio-active hot springs. It had caught his attention, while in Europe, that large amounts of capital were being assembled to exploit their curative waters. None of the latter, he found, were superior to those of British Columbia. A tourist can leave Vancouver by motor car and at the end of each day find a resting place at a hot springs, with full radio active properties, already equipped with good accommodation—Harrison, Halcyon, the Windermere and Banff. Some days, Dr Prowd thought, each of these places would be a Mecca for thousands in search of health and pleasure. Their value, enhanced by the scenic beauty of the country to be traversed in order to reach them, will undoubtedly prove a real asset to the whole province."—(*The Vancouver Sun*)

ULTRA-VIOLET RAYS AND CLOTHING

"The health-giving ultra-violet rays of sunlight, which everybody wants nowadays, pass through cotton, linen and rayon fabrics about equally well when these are of equal weight and closeness of weave. Fresh, white, natural silk is almost as transparent toward the rays as bleached cotton, while wool is only about half as transparent. These are some of the results obtained in a study of the transmission of ultra-violet radiation through various fabrics, conducted at the U S Bureau of Standards by Dr W W Coblentz, Dr R Stair and Dr C W Schoffstall, and reported in the bureau's new *Journal of Research*. "In all cases when the fabric is dyed, or slightly yellowed with age, the ultra-violet transmission through the thread is greatly decreased. Hence, as is to be expected in comparing various kinds of dyed fabrics, the one having the largest openings between the threads transmits the most ultra-violet."—(*Science Supplement* Nov 2 1928)

THERMAL CONDUCTIVITY OF GLASSES TRANSMITTING ULTRA-VIOLET LIGHT

"Increased knowledge of the beneficial therapeutic effects of ultra-violet light upon living organisms has in recent years led to the development of a number of glasses which transmit ultra-violet light more or less completely. It is evident that if any of them are to replace the window-glass now being used they must

be very poor conductors of heat, for otherwise man might pay dearly for the benefits secured by the use of these glasses because of the greater amount of heat they would allow to escape from a room by conduction. The thermal conductivity for a number of these glasses has been determined at the Iowa State College by Christiansen's method. It was found that for every glass tested the thermal conductivity was less than for window-glass." —(*Science Supplement*, Nov. 2, 1928)

Abstracts from Current Literature

MEDICINE

Vitamin A as an Anti-Infective Agent Green, H. N. and Mellanby, D., *Brit. M. J.*, 1928, ii, 691

This is an important article as it is an attempt on an experimental basis to determine the exact nature of vitamin A.

Vitamin A has always presented special difficulties in assigning to it a clinically descriptive term, because it has depended to such a large extent on a purely physiological criterion, namely, growth in young animals, for its detection. It is often, therefore, referred to as the "growth-promoting" vitamin. Since the recognition of vitamin D (the anti-rachitic vitamin) as an entity distinct from vitamin A those familiar with nutritional work have felt that to call vitamin A the "growth-promoting" vitamin is a misnomer, for good growth often takes place in its absence if the diet is otherwise complete. From the early days of its recognition it has been thought that vitamin A was concerned with resistance to infection, at least of a specific type.

The authors review very briefly the papers of Mori and Bloch in regard to the association of the rare condition of xerophthalmia with deficiency of vitamin A, and the work of Drummond, Cramer and Kingsbury, and Steenbock, on the susceptibility to lung infections of animals fed on diets deficient in vitamin A. An interesting feature is that actual histological changes occur in certain of the tissues as a result of the lack of vitamin A, as indicated especially by the researches of Goldblatt and Benischek, which showed that a metaplasia occurred of columnar, cuboidal, and transitional epithelium into the squamous keratinizing type in such cases. In view of the fact that practically all of the experimental work, except that of Goldblatt and Benischek, was vitiated by the fact that the diets employed were deficient in vitamin D and often vitamin C, in addition to lacking A, the authors felt it was desirable to repeat the work under more exact conditions. The production

of vitamin D by irradiation of ergosterol made it possible to prepare diets deficient only in vitamin A.

The animals deprived of vitamin A all died with some form of infection, and the observations were made certain by careful post mortem examinations. The results are most interesting. Animals deprived of vitamin A, but receiving vitamin D and vegetable margarine, developed, in various proportions, xerophthalmia, abscesses of the tongue, infections of the alimentary tract, nasal sinuses, or the middle ear. None of this group, however, developed infection of the kidneys or bladder, nor did they develop vesical calculus.

A second series of animals, deprived of both vitamins A and D developed the same conditions, but some few of them, unlike those of the first series, developed infections of the kidneys and bladder and vesical calculus.

A third series of animals were deprived of vitamins A and D, but given heated wheat-germ, fat-extracted wheat-germ, ergot, and fat-extracted ergot. They likewise developed the same conditions as did the animals of the second series, but this further striking feature was elicited, that the animals whose diets contained ergot had a special tendency to form calculi in the kidney pelvis.

The authors conclude that practically all animals deprived of vitamin A die of some infection or pyogenic lesions. In the control animals receiving vitamin A these lesions are absent. The administration of vitamin D does not prevent the occurrence of the lesions described and seems to be unrelated to resistance to infection.

A. G. NICHOLLS

The Nervous Complication of Measles, with a Summary of the Literature and Twelve Additional Case Reports Ford, F. R. *Johns Hopkins Hosp. Bull.*, 1928, xliii, 140

Severe cases of measles may present drowsiness or even stupor, developing on the 4th to 6th day of the eruption and disappearing with-

out any residuum. This is usually associated with a secondary rise in the temperature. There may be muscular twitchings and even convulsions, and a striking feature may be the excessive irritability. The spinal fluid is usually under pressure, but the cellular content is not greatly increased, and the globulin tests are faintly positive or are negative. Such symptoms as these are usually grouped under the term "meningism", but it is evident that they point to the brain and not the meninges. There is, however, usually an absence of focal signs, and recovery is prompt and complete. They suggest an intoxication of the nervous system without anatomical lesions.

In this review on the subject of the nervous complications of measles by Ford, he has collected all the reported cases in the literature and has added twelve more. He finds that several types occur. There is the diffuse intoxication mentioned above. Next, there are those with definite focal cerebral symptoms, usually multiple. The clinical picture in these may resemble epidemic encephalitis, or tuberculous meningitis, and it may be difficult to distinguish between them at first. In a large percentage of these cases there are residual mental defects. Epilepsy followed in four cases. Five of the patients died.

In a third group he places single focal cerebral lesions, in which hemiplegia and aphasia are the commonest symptoms, although it is to be noted that these are sometimes the residual manifestations of diffuse original symptoms. Sometimes, however, it may appear without warning, as if due to a single vascular lesion.

Another distinct and interesting group is that with cerebellar involvement, resulting in acute ataxia. Measles, indeed, is the cause of a fairly large percentage of the acute ataxias of childhood. One author is quoted by Ford as finding that 8 out of 31 cases of acute cerebellar ataxia in childhood had followed measles. The ataxia is usually generalized, but may be local. There may be a typical "intention tremor" as well as loss of muscle tone, slow or scanning speech, nystagmus, loss of equilibrium and head tremor. These symptoms are usually masked at the outset and only become evident with the increased activity of the child during convalescence. Next come paraplegias and spinal cord syndromes. Loss of sensibility is present in most cases in the early stages, but this generally passes off during convalescence and is always less severe than the motor symptoms. The sphincters are frequently involved.

Mental disturbances as the chief feature are not uncommon, and initial delirium is present in almost all cases in which the nervous system is seriously affected, except in some cases of

acute ascending myelitis, and of some hemiplegias in which the onset is apoplectic. This early delirium is usually associated with high fever and is not more frequent or severe than in any other acute infectious disease. The commonest mental residuum of measles is reduction of intelligence. In the 125 cases abstracted by Ford mental defect was noted in 22. Change in personality, irritability, destructiveness, and a-social behaviour, such as are commonly found after epidemic encephalitis, are less common but are mentioned.

The pathological changes behind all these findings are those of a toxic-degenerative character rather than of an inflammatory process. There is characteristically a perivascular myelin destruction with collection of lipid waste products in phagocytes and even in the nervous tissues. There is also great congestion of the vessels with swelling and fatty changes in the vascular endothelium. Very little change can be made out in the axicylinders and little or no destruction of the nerve cells.

The prognosis for life is good. Only about 10 per cent of all measles patients die. About 65 per cent of those who survive show residual symptoms, there is weakness in 30 per cent, ataxia in 12 per cent, mental defect or personality change in 17 per cent, and epilepsy in 5 per cent.

H. E. MACDERMOT

Studio sulle modificazioni dei globuli bianchi nella anemia perniziosa progressiva in seguito alla terapia epatica. (A Study of the Modifications of the White Corpuscles in Progressive Pernicious Anæmia following Liver Therapy) Giauni, G., *Il Policlinico*, 1928, LXXV, 2083.

Giauni in this article collects the data so far published in regard to the changes in the state of the blood in cases of pernicious anæmia which have been treated with liver extract after Whipple's method, together with his own observations. Important modifications in the red and white corpuscles are constantly observed. In 85 per cent of the cases the leucocytes are increased to the normal figure or even above it. As a rule the polymorphonuclear leucocytes are increased relatively and absolutely, while the lymphocytes are diminished. In not a few instances there is a noteworthy increase in the eosinophiles, figures such as 5, 7, 20, 25, and even 37 per cent have been recorded. The changes in question give one the impression that liver feeding promotes markedly the regeneration and functional activity of the bone marrow. They are, also, of prognostic import.

A. G. NICHOLLS

Value of Leucocyte Counts According to the Arneth-Schilling Formula in Clinical Medicine Nicholas, F W, *Med Clin N A*, September, 1928

The Arneth-Schilling method of leucocyte count involves the classification of the leucocytes in a blood smear into embryonic, young, and mature types, according to the morphology and staining reactions of the nucleus and cytoplasm. By tabulating the percentage of the various forms at intervals during the course of an infection, an estimate may be made of the reaction of the hæmatopoietic system, and further evidence may be gathered for prognosis. A predominance of immature forms is said to indicate active stimulation of an efficient bone marrow. An alteration towards more mature polymorphonuclears and mononuclears is seen with recovery and in the presence of a grave infection with inadequate tissue response.

A series of cases are cited in which this method proved of value to the clinician.

J B Ross

Rotogravure Ink Dermatitis Oliver, E A, *J Am M Ass*, 1928, *xc*, 12

This is a report of 15 cases of dermatitis which were caused by the colouring matter used in the pictures of the rotogravure section of certain weekly papers. Dr Oliver's first experience with this type of dermatitis was in 1926, when a man of 66 consulted him for a severe dermatitis of the forehead and face. The history gave no clue beyond the fact that the dermatitis was always worse on Monday and Tuesday which suggested that the irritant responsible was met with over Sunday. It did not seem to be in his home environment, however, since spending Sunday at his office made no difference. It was finally concluded, therefore, that the only detail in which his life on Sundays differed from that on other days was the reading of the Sunday paper, which contained a comic section and a rotogravure section. He was advised to stop reading this paper and the dermatitis cleared up almost immediately afterwards. A year later experimental handling of the rotogravure section brought on a fresh attack of the dermatitis.

This case served as a clue in 14 others of a similar nature. In each instance it was clearly established that the dry colour used in the ink for the coloured section was the responsible factor.

The ink itself is made up of two components, a varnish, and a dry powder which gives the colour. The varnish is a solution of gelsonite (an asphalt) in naphtha and xylene. The powder added to this is a more complicated substance, consisting of a diazo dye, called para red, in which there is an irritating coal-tar product, paramitraniline. Cutaneous tests showed this

dry powder to be the irritant and not the varnish.

It is curious that no cases of dermatitis could be found amongst the employees of the paper or amongst those manufacturing the ink. In the discussion on the case it was pointed out that a patient might by judicious selection occupy himself with illustrated newspapers of this type all through the week and so develop continuous rather than periodical symptoms. The distribution on the body too may be variable, since the handling of the paper may permit of the ink being conveyed to different parts. One case of asthma due to the ink has been reported in New York.

H E MACDELMOT

SURGERY

Acute Thyroiditis Burhans, E C, *Surg, Gynec & Obst*, 1928, *lxv*, 478

Acute thyroiditis, with or without abscess formation, occurs commonly enough to warrant careful study. The blood supply of the thyroid is rich and the production of the thyroid hormone also tends to prevent infection of the thyroid, while the physiological changes occurring during puberty, menstruation, pregnancy, and acute infections, and the development of adenomata in the gland, tend to lower its resistance.

The disease may be acute or chronic, suppurative or non-suppurative. The acute inflammation may resolve or go on to suppuration and gangrene. When suppuration occurs, the suppurative lesions may consist of multiple milary abscesses or may be large pockets of pus involving one or both lobes. Chronic non-suppurative thyroiditis is seen in the neighbourhood of adenomata, causing a localized fibrosis of the interstitial tissue. Specific non-suppurative inflammations are caused by tuberculosis and syphilis, the former giving a large, hard, nodular tumour of rather rapid growth, the latter occurring in two forms first, the diffuse thyroiditis, and, second, gummatous Riedel's thyroiditis is of unknown etiology and is characterized by a marked fibrosis of the thyroid with adhesions to the adjacent structures and produces a gland so firm that it is often diagnosed as malignant.

There are numerous etiological factors in acute thyroiditis, trauma being one of them, but, aside from trauma, infection may occur in one of four ways (1) Through a persistent thyroglossal duct, (2) By direct extension from contiguous structures, (3) By lymphatic metastases, and (4) By blood stream metastases. The bacteria causing the infection are typhoid and paratyphoid bacilli, pneumococcus, streptococcus and staphylococcus.

Clinically, acute thyroiditis occurs suddenly

with swelling or tumour formation over the thyroid, producing pain in the neck which radiates to the mastoid region or the ear. There is tenderness over the gland and chills and fever may initiate the disease. Occasionally, there is coughing and hoarseness, due to oedema, swelling, and venous congestion of the laryngeal mucosa. Dyspnoea and dysphagia sometimes occur. As the disease progresses there is redness of the overlying skin, and in some of the cases toxic goitre symptoms develop.

The prognosis of the disease is excellent if it is recognized early. The treatment is that used in any acute inflammation, namely supportive and pain-relieving. If signs of suppuration develop, incision and drainage is the best treatment, and this is best accomplished through the ordinary collar incision, with retraction of the strap muscles followed by incision and tube-drainage.

R V B SHIER

Staphylococcal Suppurative Nephritis (Carbuncle of the Kidney) Dick, B M, *Brit J Surg*, 1928, xvi, 106

Some twenty-seven cases of carbuncle of the kidney are reported in the literature. The commonest portal of entry for infection into the circulation for the *S aureus* is a skin carbuncle, boils, or smaller multiple septic skin foci, but the portal of entry may be from a whitlow, a patch of eczema, or an acute osteomyelitis. The earliest age at which the disease has been known to occur is ten years. Only in one recorded case was the infection bilateral.

The symptoms come on gradually with malaise, headache, loss of appetite and elevation of temperature. The patient may have repeated rigors. Pain may be present at the onset, but often does not appear for a considerable time after the other symptoms. It is of a gnawing character, and is confined to the loin, and the side of the upper abdomen. As the disease progresses, the patient becomes extremely ill and sweats profusely. The bowels are as a rule very constipated. The abdominal muscles on the affected side show diminished respiratory movement, and, on palpation, there is defensive boarding, and a very ill-defined mass may be detected in the lumbar region. The leucocyte count is elevated, but, as a rule, microscopic examination of the urine is negative.

A valuable aid in the diagnosis is the history of a skin lesion. Pyelography should prove useful in determining whether a perinephric abscess has arisen from a renal carbuncle, and the discovery of a filling-defect in one or more calices would suggest an intrarenal origin of the abscess.

The treatment by nephrectomy is the most effective way of eradicating the disease, but, when the carbuncle is small, some cases have been treated by a localized resection of the involved

area of kidney, while some of the abscesses seen at operation have been only drained.

R V B SHIER

Auto-Transfusion, with Account of a Case. Denni, H B, and Kinsella, V J, *Brit M J*, 1928, ii, 568

The authors feel that auto-transfusion in surgical emergencies is a measure which has not received the notice it deserves. A case in which its value was demonstrated to them was as follows. A boy of twelve years had fallen and sustained fractures of the arms and skull, the abdomen was apparently uninjured and the patient had no symptoms in that region. A few hours later, however, he showed definite signs of severe intra-abdominal hæmorrhage, and his condition soon became desperate. The hæmorrhage had evidently been insidious in onset. He was taken to the operating-room and the abdomen was opened. A large quantity of fluid blood was found in the cavity and this was quickly ladled out and dropped into citrate solution. In the meanwhile Dr Kinsella opened a vein and reinfusion of the citrated blood from the abdomen was begun at once. The source of the bleeding was found to be a tear in the pedicle of the spleen. The bleeding appeared to stop as the transfusion proceeded, and in a short time the patient's condition showed marked improvement and he made a rapid and uneventful recovery.

It is suggested that reinfusion of patient's blood might be used more often than is done. Experience has shown that blood may thus be used even after lying in the abdomen for a considerable time. The method has been advocated in many conditions, such as ruptured ectopic gestation. It has also been used in splenectomy where in addition to his blood dyscrasia the patient suffers from much blood loss and shock. As soon as the spleen is removed it is held over a vessel of citrate solution and the blood squeezed out of it. This blood is then reinfused. Loyal Davis and Harvey Cushing have also found reinfusion useful in major cranial operations. Suction is used to remove the blood from the field of operation, and even towels and swabs may have their contents rung out.

It is stated that even citrate solution is not a necessary adjunct, as the blood has been given mixed with saline or even unmodified. But the citration is the most certain method of preventing clotting and it also permits of the injection being given slowly.

H E MacDERMOT

PATHOLOGY

On the Supposed Relationship between the Viruses of Herpes Febrilis and Vaccinia. Bedson, S P, and Bland, J O W, *Brit J Exper Path*, 1928, ix, 174

Gildermeister and Heitzberg (1925, 1927) have

produced evidence which, if correct, would indicate a close relationship between the viruses of herpes febrilis and vaccinia. Their work suggests that possibly the partial cross-protection which they claimed to have demonstrated, might have been overlooked by earlier workers. Further, they reported neutralization experiments with specific sera which supported their findings *in vitro*. The authors undertook to examine into this.

Their first series of experiments was carried out to elucidate the question of cross-immunity. Guinea-pigs were inoculated on the depilated hairy skin with herpes or vaccinia virus. After allowing a suitable interval for recovery from the primary infection they were tested for immunity with the same virus, and if the result of this test was satisfactory, the second virus was titrated on them. Control titrations were made on normal animals. The vaccine virus was titrated on herpes-immune guinea-pigs, and herpes virus on vaccinia-immune animals. Little difference was found between the results of titration of herpes virus on normal and vaccinia-immune pigs and of vaccinia virus in normal and herpes-immune animals. Any slight differences that did occur might be explained as falling within the limits of experimental error.

A second set of experiments was carried on to investigate the question of cross neutralization. Anti-herpes serum, obtained by hyper-immunization of guinea-pigs, was diluted one-half with M/50 phosphate solution pH 7.6 and mixed with equal quantities of various dilutions of vaccine virus and after standing for one hour at room temperature the different mixtures were inoculated into pigs by scarification. Controls were made in which the anti-herpes serum was replaced by normal guinea-pig serum and also by the phosphate diluent.

Conversely, undiluted anti-vaccinia serum was mixed with equal parts of falling concentrations of herpes virus and inoculated by scarification after standing thirty minutes at room temperature. The herpes virus was a phosphate diffusate with a titre of 1/100. A control was made with normal rabbit serum. Also, vaccinia virus (titre 1/10,000), diluted 1/50, was mixed with falling concentrations of the serum and inoculated into guinea-pigs after standing one hour at room temperature.

Anti-vaccinia sera, undiluted, were mixed with an equal volume of herpes virus (titre 1/1000), 1/10, and inoculated. Controls were made with normal rabbit serum and phosphate. No inhibition of the vaccine virus occurred. The serum neutralization experiments fully confirmed the cross-protection experiments.

The authors think they have produced evidence to show that the viruses of vaccinia and herpes are unrelated.

A. G. NICHOLLS

THERAPEUTICS

Mercurochrome-220 Soluble Eyre, J, Notton, H. E. F. and Pope, Sir W. J., *Brit. M. J.* 1928, ii, 238.

This is a report of experimental analyses of various preparations of mercurochrome. The investigators had been impressed with the fact that intravenous injections of mercurochrome frequently caused symptoms of mercurial poisoning when given in 1 per cent strength, while comparable doses of 0.4 per cent were relatively free from this objection. It appeared therefore that certain samples of mercurochrome obtained in the open market were more toxic than others and examination of the various products was accordingly undertaken.

First of all, the chemical constitution was analyzed and a surprising diversity of composition was found to exist amongst the four samples examined, the differences being caused by varying percentages of contaminating substances. These various samples were then tested on rabbits and the conclusion reached was that the toxicity appeared to bear a direct relationship to the purity of composition.

Some clinical observations were also carried out, the sample tested being that which conformed most nearly to the theoretical constitution of the drug. The general impression gained during the employment of this particular sample was that its therapeutic activity was similar to other types of mercurochrome used in previous years, but that it was distinctly less toxic.

The experiments and observations all point to the fact that the nearer mercurochrome approximates in its analytical results to its known chemical constitution, the better the preparation as regards therapeutic efficiency and low toxicity.

H. E. MACDERMOT

The Therapeutic Action of Plasmoquinine and Plasmoquinine Compound in Malaria Manson-Bahr, P., *Lancet*, 1928, ii, 496.

During three hundred years quinine has been used as an anti-malarial specific with no radical changes in its therapy or results. It is well known that the parasite, especially that of the benign tertian type, may not be extirpated but only held in check by repeated courses of quinine over a period of years. Other cinchona compounds have proved no better. Moreover, definite individual intolerance to quinine exists and though intramuscular and intravenous administration may be used in some cases this is not always practicable or safe and an alternative drug has long been desired.

Plasmoquinine—a synthetic derivative of quinoline (alkylaminomethoxyquinoline) was used in tests against bird malaria (*Plasmodium praecox*). It was found to be sixty times as potent as quinine, especially acting upon the

sexual stages (gametocytes) towards which quinine is almost inert, but having less action on the sub-tertian types. In human malaria a dose of 0.06 gm (gr 1) daily was found sufficient. Large doses cause cyanosis, abdominal pain, and other toxic effects. The spleen is reduced in size with great rapidity. Only one-tenth of the daily dose is excreted in the urine, and courses of one week each, with five days rest between courses, are necessary to allow elimination and avoid toxicity. It was later found that the addition of a small amount of quinine sulphate increased the potency to sub-tertian types and prevented toxic manifestations. This mixture is called plasmoquinine compound, and used in tablets. The formula is plasmoquinine, 0.01 gm (gr 1/6), and quinine sulphate, 0.125 gm (gr 11).

The dosage is important. The following routine is suggested for benign tertian or quartan for one week, 2 tablets of plasmoquinine compound three times daily, four more courses, with 4-day intervals, giving 12 tablets daily. For sub-tertian types for five days, 2 tablets thrice daily, with 4 days' interval, five more courses of 5 days, with 4 days' intervals.

Disintegration of the crescents is seen after 8 tablets of plasmoquinine compound, when they may persist one month under quinine.

Eighteen cases of the benign tertian type are cited. All showed rapid improvement with contraction of spleen, even two cases which were intolerant to quinine. Eleven cases of the sub-tertian type were less satisfactory but the results were as good as with quinine. One case of the quartan type, with relapses for four years, has had none since a course of plasmoquinine compound.

It is concluded that there are not sufficient grounds for stating that plasmoquinine compound will replace quinine, but it offers an efficient substitute in patients with an intolerance, being tasteless, easily tolerated, and showing a negligible effect on digestion.

J. B. ROSS

Quel doit-êtré Actuellement le Traitement des Cancer du Sein (What is the Proper Treatment of Cancers of the Breast?) Bérard, L., *Strasbourg Medical*, 1927, vii, 116

This author first comments on the considerable variations in malignity that characterize the various tumours of the breast. Those in which the cells and their arrangement are irregular, without secretory functions, with numerous and irregular mitoses, and with marked hyperchromatism of their nuclei, are much more malignant than, say, the adenocarcinomata, in which these characters are not nearly so marked. The malignity is also more marked in the case of cancers affecting young women, and when the growth appears during

pregnancy, or *post partum*. Before one can lay down precise rules for therapy in cases of cancer of the breast it is necessary to know how these various types react to the therapeutic agent. Actually, the probability of cure depends above all on the early institution of treatment. If we can get the cases within two months of the appearance of the growth we can expect that the cures, after five years, will exceed 75 per cent. Treatment is directed to the destruction *in loco* of all the neoplastic cells in the tumours and in the lymphatic districts of the corresponding side of the thorax. Surgery gives, on an average, 35 per cent of cures, observed after two years, and 25 per cent, after five years. It is always of advantage to precede and follow operation by methodical radiotherapy. One should irradiate the whole antero-lateral region of the hemithorax, divided into five fields, mammary, perimammary, axillary and subclavicular, with moderate intensities (140 to 180 thousand volts), with half a centimetre of copper as a filter, at repeated sittings, the length and frequency of which will depend on the degree of resistance of the patient.

Preliminary radiotherapy is valuable for sterilization of the tumour and the lymphatics. Operation produces traumatic lesions of the cells of the region which hampers their means of defence and the useful effects of radiation. Recurrences should be treated like the primary lesions. First of all, x-ray or radium therapy at a distance, then surgical removal of all that can be extirpated without great destruction of the part.

Inoperable tumours and their metastases can be greatly benefited by the use of these physical agents, which are able notably to prolong life, lessen suffering, and sometimes make palliative operations possible.

A. G. NICHOLLS

Ueber die Prophylaxe der Varizellen (On the Prevention of Varicella). v. Keszmarzky, K., *Arch f. Kinderheilkunde*, 1928, lxxv, 1

In the Children's Clinic of the Royal Hungarian Elizabeth University in Pesth they have been endeavouring to obtain protection against varicella by the use of blood taken within the first thirty-six hours after the appearance of the rash from patients suffering from that disease. The freshly drawn blood is mixed with one-tenth its volume of a 5 per cent citrate solution, and 0.1 c.c. is injected intracutaneously. Of 51 children of all ages from two months to fourteen years, who had been exposed to infection, 50 escaped (98 per cent).

The procedure is simple, efficacious, and not followed by unpleasant or dangerous consequences. That the infection of varicella is not transmitted from the ill to the well by this

treatment is thought by the author to be due to the dilution of the blood or to the weakening of the virus contained in it. Possibly, though this is not suggested, it may be due to the fact that an exceedingly small amount of blood is injected, and this into the skin where absorption must be slow, giving time for the local defensive mechanism to get into action.

The duration of the immunity so produced is unknown. The author in one case observed the development of what appeared to be a varicellous herpes zoster eight months after injection.

The method is, of course, particularly useful in cases where children are known to have been exposed to infection in institutions, or where one member of a family has been attacked by the disease.

A. G. NICHOLLS

Die rohe und gerostete Kaffeebohne in der Therapie (Raw and Roasted Coffee-beans in Therapeutics) Petoc, A, *Die Medicinische Welt*, 1928, *XX*

After the continued administration of the powdered green coffee bean an increase in the calcium content of the blood is observed, due probably to the citric acid in the bean. The blood picture in anemia is favourably influenced by green coffee.

The green coffee is administered either as a powder in doses of 2 to 3 grams, or as a maceration prepared as follows. One hundred and fifty grams of green coffee are broken up in a mortar or ground in a mill, covered with 500 cc of water, and allowed to stand over night. In the morning the mixture is filtered and one to three teaspoonfuls of this extract form a dose.

The roasted coffee bean can be given as a powder in half gram doses, or the patient can be instructed to chew four of the beans. The author states that when a 'cold' is impending the prodromal symptoms can be cut short by three teaspoonfuls of the maceration taken three times in the day. In the case of acute rheumatic fever the local lesions and the temperature are favourably influenced. Here, the patient is advised to drink a tumbler of the maceration in the morning on an empty stomach. In chronic articular rheumatism 0.5 gm of the pulverized raw coffee is ordered six times a day. The unpleasant symptoms that are so often attributed to the weather are speedily relieved. In the nausea and vomiting of acidosis and vagus irritation coffee seems to be almost specific. In cases of the vomiting of pregnancy and in train- and sea-sickness the author advises the sufferer to chew slowly three or four roasted coffee beans.

A. G. NICHOLLS

Obituaries

Dr Henry Richard Smith. After a short illness of three days only, one of the best known and most highly respected physicians of Edmonton died on October 24th, 1928, from erysipelas complicated with streptococcal encephalitis. Still in the prime of life, of vigorous constitution and powerful physique, his sudden death came as a great surprise and shock to his medical confrères as well as to the whole community.

Born in New Hamburg, Ont., on September 11, 1873, of English parentage, Dr Smith obtained his preliminary education at Woodstock Collegiate Institute and Albert College at Belleville, after which he studied medicine at Trinity University, Toronto, graduating in the class of 1899. The next two years were spent in post graduate study at Edinburgh and London, and as house surgeon in Toronto General Hospital. In 1901 he came to Alberta and practised for a year and a half at Star, removing to Edmonton where he has resided continuously for twenty five years, taking an active part in the life of the community. In politics he was a staunch Conservative, at one time being elected President of the Conservative Association. In civic affairs he took a close interest, being elected a member of the City Council for the years 1913 and 1914. Always interested in medical matters, he took an active part in the local medical association and became President of the Alberta Medical Association in 1910. A member of the McDougall Church, he had been closely associated with the work of Alberta College, having been Chairman of the Board since 1913 and of the building committee. To his untiring industry and energy, not a little of the success which has attended this fine teaching institution is due. Since 1921 Dr Smith held the position of Medical Superintendent of the City Hospital



Dr H. R. Smith

Board, having charge of the Royal Alexandra and Isolation Hospitals.

Under his careful and tactful management, combined with rare executive ability, these hospitals have reached the highest standard of efficiency and service, while at the same time the annual deficits have gradually been reduced till at the present time the institutions are practically self supporting.

In 1901 Dr Smith married Martha Doyle, a daughter of John Doyle, of Elora, Ont. She died in 1903, leaving one daughter who is now Mrs. Fred. Jackson, of Clover Bar district. In 1906 Dr Smith married Mabel Rife, a daughter of David Rife, of Hespeler, Ont., who survives him with one son and two daughters, Howard and Constance, who are students of

Alberta University, and Margaret at home. Two sisters, Mrs Mabel E Davis and Mrs Eliza Smith, of Toronto, and two brothers, F C Smith, of Lamont, Alta, and J H Smith, C.E., of Colombia, South America, also survive. T H WHITEHEAD

Dr Hugh Ross passed away at the home of his son, Mr Neil Reginald Ross, in Boston, Mass., on Saturday, November 3rd. The body was taken to Clifford on Monday, November 5th, and interment was made in Clifford cemetery.

Dr Ross was born on November 11th, 1845, at Brucefield. His father, Neil Ross, was the first settler in that part of Huron Tract, and his elder brother, Donald Ross, was the first white child born between London and Goderich. Dr Ross was educated at the rural school near Brucefield, and at the grammar school



Dr Hugh Ross

in Clinton. After teaching school for two years, he attended Trinity College, Toronto, from which he graduated with honours in 1872. In November, 1873, he married Mary Bailey, of Toronto, who predeceased him in May, 1912. He spent fifty-five years in the practice of medicine, having gone to Clifford in 1881 and remained there in active practice until 1927 when he sold his practice to Dr A. F. Thaler.

He leaves to mourn his loss one son, Neil Reginald, four daughters, Mesdames Guaggenti and Creighton, the Misses Caroline and Margaret, and one sister, Mrs. Macdonald, of London, widow of the late Dr Peter Macdonald of Wingham. A F THALER

Dr Eugène Latreille. One of the best known Montreal practitioners died on November 9, 1928, in the person of Dr Eugène Latreille, Professor of Pathological Anatomy at the University of Montreal, one of the consulting physicians of the Hôtel Dieu Hospital, Officier d'Académie (France), member of the Federal Medical Bureau, late President of the Société Médicale.

Dr Latreille died suddenly in his office, 3478 St Denis Street, shortly after six o'clock at night. He had been ill for three years from high blood pressure and cerebral hæmorrhage, but that had not prevented him from giving consultations at his home. A few minutes before his death he had just dismissed some patients.

He was forty-nine years of age. Born in Montreal, he studied at Laval, practised in the local hospitals and

then went to Paris, where he entered the Faculty of Medicine as a student and was received a Doctor of the Faculty of Paris after the regular curriculum. On his return to Montreal, he built up an extensive practice.

He was appointed to the Chair of Pathological Anatomy in the Université de Montreal in the year 1910, following the resignation of Prof E St Jacques, and he discharged the activities of this post with great zeal and efficiency until 1916, when his failing health led to his replacement by the distinguished scientist Professor Masson, late of Strassbourg.

Dr Latreille was an active contributor to the proceedings of the Société Médicale de Montreal and prominent in the editorial management of *L'Union Médicale*, the local organ of the French profession in Montreal. By his effort also he did much to build up and reorganize the pathological museum of the Université de Montreal after its damage by fire in the year 1916, and in this connection he maintained intimate and fruitful relations with the management of the Pathological Museum of McGill University and the Exchange Department of the International Association of Medical Museums.

Dr Latreille is survived by his widow, formerly Miss Berthe Lamontagne, Madeleine, a daughter, Mrs D C Cartier, Mrs Alphonse Lamy and Miss Aldea Latreille, sisters, and Dr Aime Lamontagne, a brother-in-law.

AN APPRECIATION

Three years ago Latreille was suddenly seized with an attack, which he himself was able to diagnose as cerebral hæmorrhage. At that tragic moment disappeared one of the finest figures in the medical profession of Canada. His life since was a brave struggle against the progression of his malady. Now the dramatic contest is over and Latreille is no more.

Always interested in music, those who knew him at the university will remember with what mastery he could conduct an orchestra or a chorale. If he had pursued his bent he would have progressed as far as he eventually did in his chosen profession, medicine.

While pursuing his studies at Paris he developed a talent for pathological anatomy and clinical medicine which became a veritable passion with him. His thesis for his doctorate "*Contribution à l'étude des modifications de la surrenale*", Paris, 1907, proved that he did not fear laborious tasks, on the contrary, complicated situations always interested him, he looked for the rare cases, the difficult diagnoses, he had scientific curiosity. He was, in fact, an artist in medicine as he would have been in music.

Teaching brought the greatest satisfaction to Latreille. He enjoyed it, not only for the pleasure of communicating his knowledge to his enquiring pupils, but because it called for a sort of intellectual gymnastics in compelling careful preparation of his theme.

Of humble origin, like most Canadians, for very few can claim descent from the loins of Jupiter, Latreille was essentially the aristocrat. Yet, those who knew him best will recall that he could unbend and give himself with abandon to the most animated discussion on many out of the way topics.

My old friend and comrade carries with him the unanimous tribute of admiration from all who had the privilege of knowing him.

The Université de Montréal will cite him as an example to future generations, the Hôtel Dieu will never forget the void created by his departure, and his pupils will long remember his authoritative lectures, the Société Médicale de Montréal will often recall the numerous brilliant communications which he made to it, and the Editorial Board of *L'Union Médicale* will realize that they have lost a colleague whose writings were always remarkable for their originality.

Latreille did much to elevate the character of our budding Canadian medical science. P Z RHEAUME

Dr Raoul Masson One week after the sudden death of Professor Latreille, the faculty of medicine of the University of Montreal lost another of its members in the person of Dr Raoul Masson, who died suddenly at the close of a meeting of the medical board of Ste Justine Hospital, of which he was chairman. Death was due to heart failure.

Dr Raoul Masson was born in Montreal, February 6, 1875, the son of Joseph Edouard Masson, of Lake Masson, St Marguerite, Que. He studied at Terrebonne and St Mary's Colleges, then at Montreal College and at Laval University of Montreal. He was admitted to the practice of medicine in 1902, with honours, and went to Europe, where he specialized in the study and treatment of the diseases of childhood.

The late Dr Masson was Professor of Pædiatrics at the University of Montreal, professor of child hygiene at the provincial schools of domestic science, governor of Notre Dame and Ste Justine Hospitals, of which last named hospital he was one of the founders, some years ago. He always took an active part in the fight against infant mortality, and was a firm believer in the parochial free milk stations for indigent mothers.

One of the administrators of the Masson Estate, he was also vice president of the Société Médicale de Montréal, member of the Cercle Universitaire, the National A.A.A., the Kiamika Hunting and Fishing Club, the St Denis Club, and the officer's mess of the 65th Regiment, C.M.R. Mrs Masson, having predeceased her husband in April last, he is survived by one son, Léon Masson, and by two brothers, Leopold Masson, of Montreal, and Leon Masson, of Terrebonne.

AN APPRECIATION

By the most untimely death, on November 14th, of Dr Raoul Masson, who was Professor of Pædiatrics at the University of Montreal, and of Clinical Medicine at Ste Justine's Hospital, the medical faculty has lost one of its most distinguished members.

Dr Masson will be remembered not only by the medical profession but also by the public, who recognized in him a most remarkable personality. He was a leader, and a very active one, in the fight against infantile mortality, and only in the afternoon before his death he had received about forty mothers with their children, at the Baby Clinic of the Sacred Heart Parish, leaving the clinic almost exhausted a few hours before his death.

Of a most amiable character, Dr Masson was well liked by all those who had the pleasure of knowing him, both professionally and socially, and was recognized as a guiding spirit by all students attending his clinics.

His loss is most regretted and will be keenly felt.
GASTON LAPIERRE

Michael Thomas Sullivan, M.D., C.M. The sudden and unexpected passing of Dr M. T. Sullivan of Glace Bay, which took place at the Halifax Hotel on the morning of November 18, 1928, came as a shock to all members of the Medical Society of Nova Scotia. For more than 25 years he has been almost our most constant attendant at annual meetings and only the day before his death he expressed to the secretary of the Society his great regret that he was unable to be with us at our 75th anniversary meeting. In 1920 he was elected a vice president of our Provincial Society and he was its president in 1921 when the renaissance of the Medical Society of Nova Scotia took place. Our present day organization owes much to the wisdom and energy of Dr "M. T.", as he was familiarly called.

Dr Sullivan was born in Glace Bay on March 13, 1874, a son of Michael and Susan (Lott) Sullivan, formerly of Sydney. He received his education at the common schools of Glace Bay and then entered St Francis Xavier College. He graduated from the medi-

cal faculty of McGill University in 1901 and at once started practice in his home town. To few men is it permitted to make good as we use the expression, to the extent that did Dr Sullivan. At that time certain men stood very high in the esteem of that community. Drs McKay and McKeen had been the strong men in the profession and very shortly Dr Sullivan was called upon to fill their places. That he did this with honour to the profession, with credit to the hospital in which he did his best work, and to himself, is vouched for by any one who knows anything of Glace Bay.

It was no small task that was set before this young medico when two great men passed along and handed him the torch. Ability, knowledge, personality, confidence, honesty, and the faculty of seeing weak points and how they could be overcome, enabled him to become the presiding genius, if we may use the expression, of St Joseph's Hospital. Just here it is only fair to note that much of Dr Sullivan's influence in both town and hospital matters was due to the wise and kindly counsel of Mrs Sullivan, whose efforts for community welfare in Glace Bay are recognized by all.

We are flooded with critics and knowers but "Mike Sullivan" always told you how you should do the job he brought under fire. He never was a destroyer, he was always trying to build up. Perhaps here lies the secret of the great influence such men as Dr Sullivan have in their respective communities. Certainly no citizen of Glace Bay was any more influential than he. He was always building up, whether in his own professional work, in the town or country, in St Joseph's Hospital, the medical societies, the Board of Trade or the activities of his Church, he was always looking forward to bigger and better things.

Dr Sullivan was an executive member of the Associated Boards of Trade of Cape Breton Island and a member of the Executive of the Cape Breton Tourist Association. He belonged to the Glace Bay Council of the Knights of Columbus, the Catholic Mutual Benefit Association and the Ancient Order of Hibernians. He was married on June 11, 1902, to Miss C. McLean of Antigonish. He is survived by Mrs Sullivan and their six children.

His funeral took place in St John's Church, New Aberdeen, on Wednesday, November 21st, conducted by Dr H. P. McPherson, vicar general of the Diocese of Antigonish, representing His Lordship Bishop Morrison. The Medical Society of Nova Scotia extended to Mrs. Sullivan and family sincere sympathy and sent floral offerings as did also the local Branch Society.

The Halifax press published several fitting tributes from prominent persons. From these we may quote the following by Dr S. R. Johnston, President of the Halifax Medical Society:

"In spite of the long years of practice, during which he soon became recognized as one of the outstanding surgeons in the province he always found time, through personal sacrifice, to take part in educational and other voluntary medical activities. He was a member of the American College of Surgeons and, in this connection, did much to further the scheme for hospital standardization, the value of which is now so universally recognized. It is only little more than a year ago since he read, before the Halifax Medical Society, a valuable paper on "The Surgery of 25 Years in a Mining Community"—a paper filled with keen observations drawn from these long years of hard, laborious work under trying circumstances.

Regarding his sterling qualities as a man, much might be said. The beautiful words of Browning would appear fitting:

"One who never turned his back, but marched, breast forward,

Never doubted clouds would break,
Never dreamed, though right were worsted, wrong
would triumph.

Dead, we fall to rise, are baffled, to fight better,
Sleep, to wake' "

His passing makes a gap in the ranks of the medical profession in this province which will not soon be filled. The heartfelt sympathy of the Halifax Medical Society goes out to his sorrowing widow and family.

S L WALKER

Dr Samuel McMurrich McLay died in Woodstock on November 2, 1928. A graduate of Toronto University in 1910, Dr McLay had been intimately connected with the professional activities of Woodstock for nearly twenty years, and was a practitioner of exceptional merit. With the outbreak of war Dr McLay went overseas and gave freely of his services for the duration of the conflict. Returning to Woodstock, he resumed his practice, and soon became interested in the many problems of education and civic welfare. He had been Chairman of the Board of Education for some years, only slackening up in his activities when a trying illness of many months' duration had made this necessary.

Rev William T Bruce, M.D., Truro, N.S. At the advanced age of 87 years there passed away, after only a week's illness, a stalwart of the Presbyterian Church that the younger generation of medical men had for gotten. Dr Bruce was born at Middle Musquodoboit, graduated in Arts from Dalhousie, in Theology from Pine Hill, and in Medicine from Edinburgh, for the purpose of becoming a medical missionary. Poor health forced him to abandon this objective and he devoted many years of service to many churches in Nova Scotia, where he was greatly beloved. His health forced him again, some twenty years ago, to retire from active preaching, and he has lived a quiet life in Truro since that time. His wife predeceased him in 1918. Six sons and two daughters survive.

Dr Archibald A Chisholm, Manuels, Nfld. The death occurred on October 7th, of Dr A. A. Chisholm, a native of Antigonish County, N.S., a son of the late Mr and Mrs Archibald Chisholm of Beaulieu. He graduated from the University of Baltimore in 1897, and was sixty-two years of age. He is survived by his wife, formerly Miss Margaret MacNeil, sister of Archbishop MacNeil of Toronto, and one son and daughter. The son, William, is now a student at St. Francis Xavier University.

Dr R. Courchesne. Following an attack of pneumonia, Dr Robert Courchesne, died at his home, on October 24th, in his thirty-fourth year. Dr Courchesne was born in St. Francois du Lac, and had practised in Montreal for five years. He was a graduate of St. Mary's College and the University of Montreal.

Dr N. A. Davis, of Madawaska, died late in September, 1928. He was a graduate of Queen's University

in 1898, and had practised in Madawaska for thirty years.

Dr J. H. Duncan died at Chatham, on September 22, 1928. He was M.B. of the old Toronto School in 1881. Dr Duncan had practised continuously in Chatham for forty-seven years, and was well known as a hard working general practitioner.

Dr Margaret Gordon, one of the best known of the medical women in the country, died on September 22, 1928. She graduated at Trinity in 1898 and was associated with the Women's Medical College up to the time of its absorption by the University of Toronto. A keen worker, one of the first women to see that women must fight for suffrage rights, and one of the first to lead in that fight, Dr Gordon was always the centre of any movement which had to do with the betterment of woman's condition.

Dr Peter L. Graham, one of the oldest of the medical profession in the Province of Ontario, died at Lobo, on November 4, 1928. He was a graduate of Trinity College, Toronto, in 1877. Dr Graham practised at Lobo for more than fifty years and was known as a fine type of the old physician.

Douglas B. Kennedy, M.C., M.D., D.P.H., died in the Toronto General Hospital on September 25th. He was born in Pembroke, Ont., and graduated in Medicine at Queen's University in 1902. After leaving college he served as an interne in the Water Street Hospital, Ottawa, for a year, and was then appointed ship's surgeon by the Elder Dempster Line. In 1907 he was engaged as physician in connection with the construction work of the Grand Trunk Pacific Railway. In 1913 he was on the staff of the Rotunda Hospital, Belfast.

During the war he was attached to the Sixth Field Ambulance, and was mentioned in despatches several times, being awarded the Military Cross in 1917.

After demobilization he returned to his former occupation as medical officer on various pieces of construction work. He received the Diploma of Public Health in 1923 from Toronto University. Dr Kennedy was a brilliant diagnostician and an able industrial physician.

Dr James Palmer Peake died suddenly at his late residence, Ashern, Manitoba, on November 11th, in his sixty-second year. Dr Peake was a native of New Brunswick, and graduated in 1896 from McGill University. His wife, who predeceased him, was a daughter of John Wilmot, Esq., and granddaughter of the late Hon. R. D. Wilmot, formerly Lieutenant Governor of New Brunswick. Dr Peake served in the late war as medical officer of the 78th battalion (Winnipeg Grenadiers), winning the Military Cross. He is survived by two daughters. The funeral took place on November 17th to Brookside Cemetery.

We can increase our powers of observation by training and practice, and we can extend their range by means of special instruments and methods. We can increase our knowledge by study and experience, but can we improve our powers of judgment? I greatly

doubt it. Judgment seems to be an inborn faculty, the result of a union of mind and character, which a man either has or has not, and it is almost as difficult to increase it as it is to add a cubit to his stature—Robert Hutchison, *Brit. M. J.*, 1928.

News Items

GREAT BRITAIN

The Medical Society of London

At the opening meeting of the Medical Society of London it was announced by the Hon Treasurer that the famous John Ward Diary had been sold for £10,000. Of this sum £9,000, he said, had been invested, the remaining £1,000 going to the improvement of the Library.

The National Association for the Prevention of Tuberculosis

The fourteenth annual conference of the National Association for the Prevention of Tuberculosis was held on October 15th and 16th, in the Great Hall of the British Medical Association House, Tavistock square, London. Sir Arthur Stanley, as Chairman of the Council, formally opened the conference at 10 a.m. on Monday, when Dr R. C. Ferguson, of Saskatchewan, introduced the subject of the occurrence of tuberculosis among primitive peoples. He was followed by Colonel J. J. Vassal, M.D., ex-director of health of French Equatorial Africa, and by Prof S. Lyle Cummins, principal medical officer of the Welsh National Memorial Association. On Tuesday Sir Robert Philip introduced the second subject, being the principles underlying a scheme of anti-tuberculosis measures in any country. He was followed by Dr Howard Holbrook, of Hamilton, Canada, and Dr G. Lissant Cox, central tuberculosis officer for Lancashire. The discussion was continued on the afternoon of each day.

Welsh National Medical School

The dispute between the authorities of this School and the Cardiff Royal Infirmary, where the students have hitherto done their clinical work, appears to be reaching a climax. Public opinion in South Wales is crystallizing on the side of the authorities of the medical school, whose efforts to provide adequate instruction for students in their final years have been nullified by the refusal of certain members of the staff to co-operate. Lord Aberdare, who has been the treasurer of the hospital for several years and a most generous subscriber to its funds, has resigned this post, giving the following

reason: "The recent decision of the Council not to co-operate with the medical school is so contrary to all I expected of them that I feel bound to take this step." He has refused to reconsider his resignation and has suggested that the matter in dispute should be referred to Sir John Eldon Banks. At a meeting of the Cardiff City Council, held on October 8th, Alderman H. M. Thompson asked the chairman of the Finance Committee when the committee were going to recommend to the City Council the withdrawal of the £2,000 subscription granted to the Cardiff Royal Infirmary, in view of the action of the executive body of that institution in arbitrarily withdrawing facilities necessary for the medical education of Welsh students. It seems probable that the embarrassments of this unfortunate school may shortly be relieved.

Sir Charles Tomes

The death, on October 23rd last, of Sir Charles Tomes, at the age of 83, recalls the career of one who did much to raise odontology to its present position among the medical sciences. His work, however, was largely a development of what had been begun by his no less distinguished father, Sir John Tomes, of whom it has been said that "he began to practise dentistry when it was a trade, and left it a well equipped profession, he showed that a dentist is capable of the highest kind of scientific work—that of scientific observation."

After a brilliant career at Oxford where he placed himself in the first class in the School of Natural Science, Sir Charles Tomes entered as a medical student at Middlesex Hospital, where his father, who was then on the staff as surgeon dentist, had studied before him. His studies on the development and structure of teeth were largely responsible for his being elected F.R.S. at the early age of thirty-two. Twenty years later his dental researches were recognized by election to the Fellowship of the Royal College of Surgeons of England.

The many tributes paid to him show him to have been a man not only of high scientific capacities, but one who also possessed and developed to a high degree an artistic sense and a keen interest in a wide variety of subjects.

PRINCE EDWARD ISLAND

Drs W. J. MacMillan, Charlottetown, and E. T. Tanton, Summerside, attended the annual meeting of the Medical Council of Canada, held on September 5th at Ottawa, as representatives of the Prince Edward Island Medical Council.

The Trustees of the Prince County Hospital, Summerside, have purchased for a nurses' home, the property across the street from the hospital, lately owned by Mr F. A. Johnston. This is a very nice property with splendid grounds and will make an ideal nurses' home. The purchasing of this property will also release a number of private rooms for the use of patients, thus increasing the accommodation of the hospital.

The Extra Mural Post Graduate lectures, under the auspices of the Canadian Medical Association,

which were held at Charlottetown in the City Hospital on September 26th, were well attended. The lecturers were Dr H. B. Atlee, gynaecologist and Dr F. B. Mack, urologist, both of the teaching staff of Dalhousie Medical School, Halifax. The lectures were well presented and were essentially practical.

At the morning session Dr Atlee took up the subject of abortion, which he treated in a very able manner. Dr Mack dealt with urological symptoms in general and the importance of investigating these symptoms properly.

At the afternoon session Dr Atlee discussed "Pelvic infection", and went into the treatment very thoroughly. Dr Mack dealt with "Hæmaturia and pyuria" in an exhaustive manner. The lectures were illustrated by lantern slides.

The thanks of the meeting were conveyed to the lecturers by the Chairman, Dr S. R. Jenkins.

J. A. MACPHEE

NOVA SCOTIA

A Medical Week at Halifax

From the fifteenth to the twentieth of October, the medical profession of Nova Scotia foregathered at Halifax for the seventy fifth annual meeting of the Provincial Medical Society. The meeting was arranged to synchronize with the "refresher course" which the medical faculty of Dalhousie University provides every autumn, and one day of the week was set aside to celebrate the sixtieth anniversary of the birth of the faculty. The most harmonious co-operation between Society and University, coupled with the practical assistance of the Canadian Medical Association, combined to make the week an unqualified success and to provide several unusual and rather interesting features. Through the good offices of the Canadian Medical Association the profession of nearly every province in the Dominion was represented, while each Canadian Medical School, with but one exception, had its representatives in attendance at the distinctively Dalhousie functions.

The general arrangement of the program was similar to the refresher course of past years, the mornings being given up to clinics and the afternoons to formal lectures. At the afternoon lectures, however, Dr L R Morse, President of the Medical Society of Nova Scotia, occupied the chair. Most of the clinics were by members of the Dalhousie faculty, but, on the other hand, most of the lectures were by visiting physicians, including Dr M G Archibald, of British Columbia, Dr George R Johnson, of Alberta, Dr William Boyd, of Manitoba, Drs J W Crane and Alexander Primrose, of Ontario and Dr W W Chipman, of Quebec.

At the dinner of the Medical Society, Drs Primrose and Routley conveyed the greetings of the Canadian Medical Association, while several provincial societies were officially represented as follows: British Columbia by Dr Archibald, Alberta by Dr Johnson, Manitoba by Dr Boyd, Ontario by Dr E A McQuade, Quebec by Dr Chipman, New Brunswick by Dr J V Anglin, and Prince Edward Island by Dr H D Johnston. Each of these extended felicitations on behalf of his Society, as did the representative of each of a number of the branches of the Nova Scotia society.

On Dalhousie Day, after the morning clinics, all in attendance were entertained at luncheon by the governors of the University. In the afternoon a ceremony of particular interest took place at the Dalhousie Health Centre when honorary degrees were conferred on Dr Finlay MacMillan, the only surviving member of the first class of graduates (1872), and upon Dr Alexander Primrose and Dr W W Chipman, both natives of Nova Scotia. Dr George H Murphy, on behalf of the Halifax branch of the Medical Society, presented a tablet in memory of the original faculty. For the Cape Breton branch, Dr J C Morrison asked the University to be custodian of enlarged photographs of Lt Col R. C. McLeod, Lt Col T Howard MacDonald, Major Walter MacLean and Major Kenneth A MacCush, members of the Cape Breton profession who gave their lives in the Great War. To the university, various donors presented enlarged photographs of former members of the medical faculty, and a bust of Sir Charles Tupper, who was actively identified with the establishment of the school. In the evening, a Dalhousie medical dinner was held when, besides local oratory, short congratulatory speeches were heard from Major General Foster, (representing the University of Alberta), Dr J J Guerin, (University of Montreal), Dr W W Chipman, (McGill University), Dr J V Anglin, (Queen's University), Dr Alexander Primrose, (University of Toronto), Dr J W Crane, (University of Western Ontario), Dr William Boyd, (University of Manitoba). Laval University telegraphed regrets at

inability to send a representative, but sent cordial greetings.

The tablet referred to above bears the following inscription:

IN MEMORY OF THE FOUNDERS OF THE
FACULTY OF MEDICINE
OF DALHOUSIE UNIVERSITY
1868

W J Almon, M.D., Pres	Edward Farrell, M.D.
A P Reid, M.D., Dean	A. H Woodill, M.D.
A G Hattie, M.D.	J D Ross, M.D.
G Lawson, Ph.D., LL.D.	T R Almon, M.D.

Rev James Ross, Principal, Ex officio
"THEY BUILT BETTER THAN THEY KNEW"
Placed by the Halifax Branch of the
Medical Society of Nova Scotia, 1928

The clinics were held mostly at the Victoria General Hospital, though the Children's and the Grace Maternity Hospitals each shared. Except on Dalhousie Day the afternoon lectures were given at the new Lord Nelson Hotel, which was completed just in time to permit of its utilization as headquarters for the Medical Society and which was reserved for that purpose. This fine hostelry was, in effect, a medical club for the week.

In addition to the functions already mentioned, a complimentary luncheon to honorary members deserves special notice. While the number of honorary members who could attend was small, the occasion was notable on account of the presence of Dr A J Cowie, who, though upwards of ninety-three years of age, made a vigorous and interesting speech.

Numerous minor functions were arranged for the wives and daughters of visiting doctors, and on Friday evening both sexes took part in a very enjoyable dinner dance.

The showing of the film illustrating the action of radium on the animal cell, arranged by courtesy of Dr Routley for the Canadian Medical Association, attracted much favourable comment. This was thrown open to the public, and was attended by large numbers of the laity.

Tenders are asked for the erection of a new wing to the Payzant Memorial Hospital, Windsor.

At the annual meeting of the Associated Boards of Trade of Cape Breton, held early in October, Dr M T Sullivan, Glace Bay, was elected President, and Dr Nat MacDonald, Sydney Mines, Vice president.

The Halifax Society of McGill Graduates tendered a complimentary luncheon to Mr E W Beatty, Chancellor of the University, at the Lord Nelson Hotel on October 23rd. Dr A E Doull is President, and Dr J C Acker is Secretary of the Society.

An addition is to be made to the Soldiers' Memorial Hospital, Middleton, to release room in the present structure for the accommodation of an x-ray plant which has been presented to the hospital by Drs J A Sponagle and L R Morse.

A bulletin of the American College of Surgeons, recently issued, announces that eleven of the twelve hospitals in Nova Scotia, which have a capacity of fifty or more patients, have been "fully approved."

These are the Highland View Hospital, Amherst, St Martha's Hospital Antigonish, Glace Bay General and St Joseph's Hospitals, Glace Bay, Children's, Grace Maternity, and Victoria General Hospitals, and Halifax Infirmary, Halifax, Aberdeen Hospital, New Glasgow, City Hospital, Sydney, Yarmouth Hospital, Yarmouth. The New Waterford General Hospital has been "conditioned"

The new Hospital for Infectious Diseases, Halifax, was opened for the reception of patients on October 25th. Only a single patient had to be transferred from the old hospital. The new building, which is situated in the hospital area in immediate proximity to the Dalhousie Medical School, is well planned and admirably equipped. The normal accommodation is for forty-two patients, but this can be readily expanded to provide for fifty. There is abundance of open space about the building, and the orientation allows of all wards being flooded with sunlight. It may be remembered that there was considerable opposition to the erection of this hospital, and that a mayor of the city resigned because of the support given to the undertaking by the City Council. The credit for the origination of the enterprise, and for pushing it through to completion, is due principally to Dr W D Forrest, Chairman of the City Health Board, who was indeed fatigable in overcoming difficulties and opposition of one kind or another.

The officers of the Medical Society of Nova Scotia, elected at the seventy-fifth annual meeting, are as follows: President, Dr R H Sutherland, Pictou, Vice-presidents, Drs G W T Farish, Yarmouth, and A. Calder, Glace Bay, Secretary, Dr Smith L Walker, Halifax, Treasurer, Dr J G D Campbell, Halifax. Next year's meeting is to be held at Pictou.

An extended reference to the annual meeting of the Medical Society of Nova Scotia, with the several functions associated or combined therewith, will be found elsewhere in this issue of the *Journal*. The program attracted the largest attendance ever recorded at a meeting of the provincial society. Dr Smith L Walker, the energetic secretary of the Society, has received many well deserved words of praise for initiating and forwarding the scheme which was executed so satisfactorily.

Tetanus, which is by no means a common condition in Nova Scotia, has recently been responsible for two deaths in the province, both occurring in the vicinity of Bear River. In neither case was medical aid summoned early enough to permit of the successful use of anti-tetanic serum.

Dr M A B Smith, of Dartmouth, has gone to London for some months of study in the hospitals there. He will visit several European medical centres before he returns home.

Dr Byers, of East Orange, New Jersey, who was

associated with Dr Pitkin in the production of spinocaine, was a recent visitor at Amherst, where he assisted at the first operation with spinocaine as the anæsthetic attempted in that town.

Dr Evelyn Rogers (Dalhousie, 1927), after serving for a year as interne at the Englewood, New Jersey, Hospital, has accepted an appointment on the medical staff of the Nova Scotia Sanatorium, Kentville.

Early in November, a class of nine nurses graduated from the training school of the Nova Scotia Hospital. The large recreation hall of the hospital was brilliantly decorated for the occasion. The graduates were addressed in appropriate terms by Dr K A MacKenzie. The ceremony was followed by a very enjoyable dance in which the nurses and their guests participated.

At the annual meeting of the Nova Scotia Medical Society, Dr A C Jost, Provincial Health Officer, was elected Chairman of a Committee on Historical Medicine. Two interesting letters from the late Sir Charles Tupper, M.D., were presented during the meeting to the archives of the Society. W H HATTIE

The Medical School of Dalhousie University announces the appointment as Assistant to the Chair of Pathology and Bacteriology of Dr Clyde W Holland, a Dalhousie graduate of 1923. Except when doing post graduate work in London, Dublin and New York, Dr Holland has, since graduation, been associated with the staff of the university. He graduated in Arts from the university in 1916.

The 22nd Field Ambulance Dinner was held at the City Club October 8, 1928. Col H A Chisholm, Officer Commanding, presided with Major J G D Campbell, as Vice, proposing the Toast to the King. Officers of the Ambulance present were Captain S H Keshen, Prov. Lieut H N Gosse, and Prov. Lieut W J Keating. Among the guests were Major Gorrish, S.M.O., M.D. 6, Major Murray and Captains of the R.C.A.M.C., Lieut Victor Mader of the Artillery and Major C S Major, Quarter Master. A pleasant feature of the evening was the presentation, by Captain Keshen on behalf of the Ambulance, to Major Murray of a sterling silver fruit bowl, as an appreciation of his services during the Aldershot Camp of 1928. Colonel Chisholm commented on the very pleasant relations existing between the Militia and Permanent Medical services. The Ambulance now has a special Officers' Mess in the Armouries and Badminton winter contests will soon be under way. First Aid and other training will also be carried out for the men.

District Military Orders, M.D. 6, issued October 23, 1928, contain the following item—

No. 9 (Reserve) Stationary Hospital, C.A.M.C. Major S L Walker to command the Hospital, with effect from the first of April, 1928 (M.O. 459/1928).

NEW BRUNSWICK

The first extra mural team to visit New Brunswick this autumn received a flattering welcome throughout the province which was richly deserved.

Dr R R Fitzgerald, of the Goutre Clinic of the Montreal General Hospital, classified the types of gout commonly met with, emphasized obscure symptoms, and stressed the necessity for careful iodine therapy. He also stated that operation at the proper time was the one successful method of treatment.

Dr D S Lewis, of the Royal Victoria Hospital,

Montreal, needed no introduction to his audiences. He discussed edema and illustrated his program by a well-planned lantern demonstration.

Both gentlemen handled their subjects with a facility that argued for their exact knowledge of the subject under discussion.

At a recent meeting of the Provincial Red Cross Society most encouraging reports were received from the outpost hospital at St Leonard's which has pro-

vided most necessary services which would otherwise have not been available. A special request was received for an organization of another outpost hospital at Claro in place of the present private hospital of Dr LaPorte. There has been already a request for an outpost hospital on the Island of Grand Manan. These areas although not far removed from large centres are yet unbenefited by methods of rapid transportation. It is to be hoped that the Red Cross funds will be sufficient to provide these desired services.

At the meeting of the Provincial Government, held in Moncton on October 20th, Dr J. A. Melanson was appointed to succeed Dr G. G. Wherrett as Travelling Tuberculosis Diagnostician. His headquarters will be at River Glade. Dr Melanson is a graduate of Edinburgh University and is a son of Hon. O. M. Melanson.

The delegation of Public Health Officers from New Brunswick to the meeting of the Canadian Public Health Association at Winnipeg included Dr G. G. Melvin, Chief Health Officer, Dr Wm. Warwick of Saint John, and Dr C. W. McMillan, Provincial Tuberculosis Diagnostician. These gentlemen intend to take in the meeting at Chicago on their return journey.

Miss Mary F. Bliss, Superintendent of the Soldiers' Memorial Hospital at Campbellton, has resigned her position to accept a similar position in Guelph.

Dr A. B. Walter, late of Cambridge, is at present doing some hospital work in Montreal previous to his removal to Saint John where he will practise in the future.

Dr Geo. Skinner, of Saint John, has returned to his practice after a month's study in New York.

Dis. L. M. Curran, G. A. B. Addy, A. E. Macaulay

and D. C. Malcolm attended a meeting of the American College of Surgeons in Boston.

Dr E. W. Lunney, of Saint John, attended a meeting of the Canadian Anaesthetists' Society which was held in Boston in conjunction with the meeting of the New England Society.

Dr J. M. Cruikshanks, of Saint John, sailed on September 24th to assume the duties of his new appointment as Medical Officer in charge of medicine and surgery in the British Government Hospital at Nassau, Bahamas.

Dr J. Boyle Travers, of the staff of the Provincial Hospital, has been holidaying in Prince Edward Island.

At the meeting of the Canadian Public Health Association at Winnipeg, Dr William Warwick, of Saint John, was elected Vice President of the Association.

Dr Maves Case, of Saint John, has returned from a trip to Upper Canada and the Eastern States.

Dr G. Clowes Van Wart attended the meeting of the American College of Surgeons at Boston.

Dr Geo. M. Belver has begun practice in Woodstock, where he will specialize in surgical branches.

The Boston papers announced the wedding of Dr Levi M. Curran to Elizabeth McLean on October 10th.

Dr and Mrs J. V. Anglin were recently in Halifax. Dr Anglin represented Queen's University at the Diamond Jubilee Celebration of Dalhousie University.

Dr W. O. Chestnut of Hartland has been recently visiting his family and friends in the southern part of the Province. A. STANLEY KIRKLAND

QUEBEC

The fact that not one baby died at the Montreal Foundling and Baby Hospital, St. Urbain Street, during last summer—a time fatal to so many children—was cited as a proof of the health giving conditions the little inmates enjoy at the hospital, where a reception was held recently, to show the new isolation cubicles, which have just been completed. The new ward of six cubicles has been made possible largely from the funds of "Violet Day" with special donations, notably that of Dr A. D. Blackador, who furnished the glass partitions which make each cubicle sufficient unto itself. All babies, on first arrival, are put for two weeks into this isolation cubicle ward, so as to guard against infection being brought in. The cubicle gallery has the most modern hospital equipment, and its walls are mostly of the "vita ray" glass through which the curative rays of the sun can penetrate. There is a sun parlor in the main building, where groups of children spend day and night with decided advantage to their health. There are usually some 70 children under two years of age in the institution, and their healthful condition is ascribed to the modern equipment of the hospital, and the personal care given under the expert supervision of Miss L. C. Phillips, the Superintendent, and her assistant, Miss L. I. Lawrence.

The new Bourget Sanatorium, a wing of the St. Jean de Dieu Hospital, Longue Pointe, was formally opened by His Grace Archbishop Gauthier. The new wing, which is a fireproof building in the form of the

letter "H", is fitted with the most modern equipment and includes, in addition to wards for observation and treatment, nurses' class rooms, laboratories and doctors' offices. In his address, the Archbishop pointed to the remarkable progress made by St. Jean de Dieu institution, and paid tribute to the University of Montreal for its large share in this work. Dr Gaston de Bellefeuille, in reply, traced the hospital's history since its founding as the Longue Pointe Asylum in 1873, touching on the changes in treatment of the mentally diseased since that time. Other speakers included Dr F. E. Devlin, Dr A. G. Desloges, and Dr L. E. Pariseau.

Colonel John McCrae, author of "In Flanders Fields", was honoured quietly in a private ceremony at McGill University, when a small oak tree, presented to McGill by the Teachers' College of the University of Georgia, was planted to his memory on Armistice Day. In the presence of a few intimate friends of the late Col. McCrae, the oak seedling was rooted in McGill soil near the medical building where the poet served as a member of the staff of the faculty of medicine prior to going overseas. Brig. Gen. Birkett presided at the planting, and an ode commemorating the poet and his poem was read by the author, C. Benedict. It was stated at McGill that, as the tree arrived from the University of Georgia so shortly before the actual planting, the ceremony was held privately because there was not time enough to notify many friends.

By a decision that all medical school inspectors in Montreal shall be employed full time by the city, whereas in the past some of them have given but a part of their time to these duties the effect will be that the city will have an additional service equal to the engagement of three new inspectors. The Executive Committee received the resignation of Dr J I Laberge, head of the contagious disease section of the Health Department. Dr Gervais, assistant to Dr Laberge, has been appointed to fill the vacancy, and Dr Laberge retires on pension.

Fifty new employees have been added to the Montreal health department since re-organization started in this service last spring. This, along with equipment redistribution of expenses, etc., means an added allocation for the health department of \$150,000 a year.

The milk and meat inspection staffs are now completely reorganized, each under a supervisor. Three

veterinaries have been added to the staff, who will divide their work between milk and meat.

Several inspectors have been added to the plumbing section, for examination of sanitary equipment in houses, etc., while the corps of school medical inspectors and school nurses have been filled since early fall.

Two supervisors of inspectors have been appointed to direct the work of the various food, meat and restaurant inspectors.

There remains to be appointed an assistant director of public health to assist Dr S Boucher, Medical Health Officer. This official will be named within a short time, it was stated, as the city authorities have a prospective nominee in mind.

All in all, the health department is now on an efficient working basis, and satisfies the conditions made by the Provincial and Federal Governments and by the American health authorities in regard to milk inspection.

GEORGE HALL

ONTARIO

The annual post graduate course given under the auspices of the Alumni Association of the University of Western Ontario Medical School was attended by about one hundred doctors and was given at Victoria Hospital, London, in conjunction with the district meeting of the Ontario Medical Association. Clinics and lectures were given by Drs J A Macgregor, Hadley Williams, F J H Campbell, F W Luney, J H Geddes, R A Johnston, J T Bowman, G C Hale, J A Oille, Toronto, Dr R V B Shier, Toronto, O M Wilson, Ottawa and C P Hutchins, Syracuse, N Y.

Prof Andrew Hunter, head of the Department of Biochemistry in the University of Toronto, has resigned and will go to Glasgow University in the spring, where he will hold the chair of physiological chemistry.

The Ontario Hospital Association held its fifth annual convention in Toronto, on October 18th and 19th, meeting at the Academy of Medicine. A very comprehensive program was provided, one which dealt with most of the problems that are met with in hospital administration. Addresses were made by Canon Cody, by

the Honourable Lincoln Goldie, by Dr McEachren, Director of Hospital Activities of the American College of Surgeons, and by Dr Harvey Agnew, Secretary of the Department of Hospital Service of the Canadian Medical Association.

One notes with interest the discussion on the subject "Should nurses take oral orders from physicians?" and the debates on other problems equally important. On Friday afternoon the association visited the new convalescent hospital at Thistletown, built by the Hospital for Sick Children for its convalescent cases. The annual dinner of the association was held at the King Edward on Thursday evening.

The new hospital at Thistletown, a hospital for the reception of convalescing children from the Sick Children's Hospital in Toronto, was opened on October 24th. A description of this hospital and the interesting ceremonies in connection with its opening will be given at a later date.

The fifth annual St Luke's Day service of the Academy of Medicine in Toronto took place in the

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chapel of Victoria College on October 21st, at 11 a.m. The service was well attended and the many members of the Academy who were present appreciated the kindness of the authorities of Victoria in permitting them to take part in the religious exercises provided, and to listen to the stimulating address delivered by Chancellor Bowles. The Academy has felt that the St. Luke's Day service should be continued, and announces that through the kindly consent of the authorities of the various college chapels about the uni-

versity campus a service will be held each year in one or other of these chapels. It is planned to make St. Luke's day service a ceremony in which all Fellows of the Academy will be interested, and it is hoped that year by year one will see a larger and larger procession leaving the Academy building, suitably, or even gorgeously, gowned in academic robes, to take part in the religious exercises which celebrate the day set apart for Medicine's patron saint. N. B. GWIN

MANITOBA

The corner stone of the new Deer Lodge Military Hospital was laid, on October 27th, by J. T. Thorson, M.P., member for South Winnipeg. Dr. J. A. Amvot, Deputy Minister of Pensions and National Health, and Dr. Ross Millar, of Ottawa, were present at the ceremony. Dr. Amvot stated that the new building would serve to extend the present facilities greatly and alleviate a serious hospital shortage in Winnipeg for ex-service men.

The Department of Health and Public Welfare of Manitoba issued its first news bulletin on November 1st. During the month of October the following communicable diseases were reported: diphtheria 32, anterior poliomyelitis 20, scarlet fever 39, measles 19, smallpox 1, typhoid 11, tuberculosis 4, ophthalmia neonatorum 1.

Dr. J. W. Crane, University of Western Ontario, London, was a welcome visitor in Winnipeg from November 16th to November 19th. On November 16th he addressed the Winnipeg members of the executive of the Manitoba Medical Association at lunch, and in the evening the Winnipeg Medical Society at its regular meeting. On November 17th, he addressed the medical students. Dr. Crane is chairman of the section of Historical Medicine in the Canadian Medical Association.

Hon. Dr. E. W. Montgomery, Minister of Health and Public Welfare, returned recently from attending the annual meeting of the American Public Health Association at Chicago. On his trip he proceeded to Ohio and Tennessee and made investigation of the rural health area scheme in operation in these states for a number of years. Dr. C. B. Covington, of the Rockefeller Foundation Institute, was in Manitoba recently in connection with proposals to establish district health areas in this province.

The annual meeting of the Board of Governors of the Winnipeg General Hospital was held on Novem-

ber 3rd. Dr. G. F. Stephens, the Superintendent, pointed out that, with the daily average of patients for the entire year reaching 600, the ratio of occupied beds was 94.4 per cent. A ratio of 85 per cent average occupancy is considered the limit of safety for a general hospital which takes in accidents and emergency work. The question of enlarging the hospital is being considered.

The annual armistice day service at the Medical College under the auspices of the Medical Alumni Association was held on November 10th. Dr. B. J. Brandon presided and Dr. William Boyd delivered an eloquent address.

At the meeting of the Winnipeg Medical Society on October 19th, Dr. E. S. Moorhead read a paper on "Prolonged spasm," and Dr. A. J. Fraser, Medical Officer of the Workmen's Compensation Board, a paper on "Infections of the hand." At the meeting on November 16th the following program was presented: "Organization of a full time rural health unit," Hon. Dr. E. W. Montgomery, "The heart, the great vessels and the brain," Dr. Digby Wheeler, "Diet and disease," Dr. J. W. Crane, London, Ont.

Dr. C. A. Barager, Superintendent of the Brandon Mental Hospital, has been promoted to the rank of lieutenant colonel, and to command No. 21 Cavalry Field Ambulance R.C.A.M.C., located at Brandon, vice Lieut. Col. and Brevet Colonel C.P. Templeton, C.B.E., D.S.O., V.D.

Dr. C. R. Gilmour has been appointed physician to, and chief of the department of medicine in, the Winnipeg General Hospital.

Dr. Lennox Arthur has been appointed Assistant in Obstetrics (Out Patient Department) at the Winnipeg General Hospital. ROSS MITCHELL

SASKATCHEWAN

At a recent reorganization meeting of the Eastern Saskatchewan Medical Society the following officers were elected: Honorary President, Dr. Elliott, Wolsley, President, Dr. Munroe, Welwyn, Vice President, Dr. Chestnut, Moosomin, Secretary-Treasurer, Dr. J. A. Keyes, Fleming.

At a recent scientific meeting of the Eastern Saskatchewan Medical Society Dr. George Craig, of Broadview, gave a paper entitled "The therapeutic value of rest in the treatment of disease," and Hon. Dr. E. W. Montgomery, of Winnipeg, spoke on "Research work on pernicious anemia as carried on by the medical staff of Manitoba University." The Moosomin Canadian Club entertained the Society members at dinner, when Dr. Montgomery again spoke, the topic of his address being "Six hundred miles of travel in northern Manitoba by canoe."

On October 20th the Eastern Saskatchewan Medical Society was visited by a post graduate team composed of Dr. H. H. Hepburn, of Edmonton, and Dr. W. A. Merritt, of Calgary. As this date fell on Saturday the attendance was rather poor, but those present discussed the papers enthusiastically. Dr. A. McG. Young, who accompanied the team, also addressed the meeting. J. A. KEYES

Dr. Ross Miller, Chief Advisor of the Department of Pensions and National Health, Ottawa, visited Regina on October 22nd. He held a conference with the medical men of Regina who are engaged in the work of the Soldiers' Civil Reestablishment. Dr. Gordon Young, of Moose Jaw, and Dr. Cox and Dr. Creighton, of Saskatoon, also attended the conference. Dr. Miller addressed the war veterans in both Moose Jaw and Regina.

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The staff of the Grey Nuns' Hospital, Regina, held their monthly meeting after a lunch on October 25th. Dr T. A. Morrison and Dr A. S. Gorrell each reported a case of Hodgkin's disease. Dr U. Gareau reported a case of pyloric stenosis in a child.

The Saskatchewan Anti-Tuberculosis League has circularized the physicians of the province asking them to co-operate in the examination of the "under par children" reported to the League. A fee of five dollars will be paid by the League for the first examination of each patient, and two dollars for each subsequent examination. Saskatchewan had a tuberculosis death rate of 46 per 100,000 population in 1927, which is the lowest rate in any of the provinces.

Dr H. H. Hepburn, F.R.C.S., Assistant Professor of Surgery, University of Alberta, and Dr W. A. Merritt, of Calgary, have just completed an extra mural postgraduate tour. Meetings were held at North Battleford, Prince Albert, Wadena, Saskatoon, Broadview, Regina, Moose Jaw, Weyburn, and Swift Current. Owing to unfortunate circumstances at two points the meetings were not as large as desirable. At all other points however, the meetings were very well attended, and were highly appreciated by those present. Dr Merritt spoke on the subjects of "Peptic ulcer," "Nephritis, acute and chronic," and "Encephalitis." Those given by Dr Hepburn were "The treatment of head injuries," "The surgical treatment of neuritis and neuralgia," "Common lesions of the brain and spinal cord." Dr A. MacG. Young, General Secretary-Treasurer, accompanied the visiting team on this tour and discussed matters of interest to the profession.

The births in Regina the first nine months of this year numbered 1,115, the deaths of infants under one year of age numbered 63. This death rate is below that of former years.

Physicians in the city of Regina and throughout the province are elated at the judgment given last week in a test case in Arcola District Court.

Municipalities throughout the province have long taken the stand that while they should pay hospital bills for patients, who are unable to do so, from their communities, it was not their duty to meet the bills of attending physicians. The judgment holds municipalities are also responsible for physicians' bills.

Dr W. R. Coles sued the rural municipality of Wawken for a fee of \$125 for attending Bobby Brickley, aged two years, for a period of 111 days in the Grey Nuns' Hospital. The boy's right arm had been badly injured and burned making it necessary for Dr Coles to do some skin grafting.

The municipality paid \$277.50 to the hospital, but refused to meet the doctor's bill, taking the stand that on the grounds of the Rural Municipality Act they were not compelled to make such payment to a physician.

Judge Rimmer gave judgment against the municipality.

Dr Gordon Wells and his wife, Dr Alice Mooney Wells, who are both graduates of the University of Toronto, have recently come from Flaxton, North

Dakota, to Weyburn. They were accompanied by their two sons and two daughters.

Dr R. E. Brown, who has been at the Regina General Hospital, has now begun to practise at Balcarres.

Dr A. S. Simpson, of Maple Creek, has associated himself in practice with Dr R. V. McCarley, of North Vancouver, and is now located in that city.

Dr F. F. Dunham, who has been practising at Girvin, has moved to Rocanville.

Dr J. L. A. Aubin, who for several years has been at Willowbunch, is now practising at Hearst, Ontario.

Dr D. M. Baltzan, who has been on extended post graduate work in Europe and the United States, has returned to Saskatoon.

Dr B. Stoller, has begun practising at Regina.

Dr A. Belkin, a recent graduate of Manitoba, has opened an office in Tomkins.

Dr M. D. Mitchell formerly of Piapot, has moved to Maple Creek.

Dr L. Beaudoin, who practised formerly in Regina, has moved to Ponteix.

Dr R. S. Conn, of Regina, has moved to Francis.

Dr E. W. Seale, of Whitewood, sold his practice to Dr S. W. Baker. Dr Seale has moved to Brandon, Manitoba.

Dr F. B. Walsh, Estevan, has just returned from Edinburgh, where he was successful in obtaining his F.R.C.S.

Dr L. M. Fairbairn is now practising with Drs Creighton and Walsh, of Estevan.

Dr James Brown, of Bromhead, where he practised for many years, has moved to Oungre.

Dr I. E. Brouse, formerly of Vibank, has moved his office to Tuxford.

Dr T. D. Kendrick has begun practising at Earl Grey.

Dr L. Jordani, who was House Surgeon at the Regina General Hospital, has opened an office at Willowbunch.

Dr Boris P. Batanoff is now at Blaine Lake.

Dr A. W. Brodie, who formerly practised at Blaine Lake, has returned from taking post graduate work in Great Britain and the Continent, and is practising in Prince Albert.

Dr S. U. Baker, formerly of Buchanan, has taken over the practice of Dr C. Seale, of Whitewood.

LILLIAN A. CHASE

BRITISH COLUMBIA

Dr G. L. Milne Honoured

"It is but a fitting tribute to Dr G. L. Milne of this city that he should have been made a life member of the Victoria Medical Society. It is a supplement to the honours he has already received in this direction, for he is an honorary life member of the British

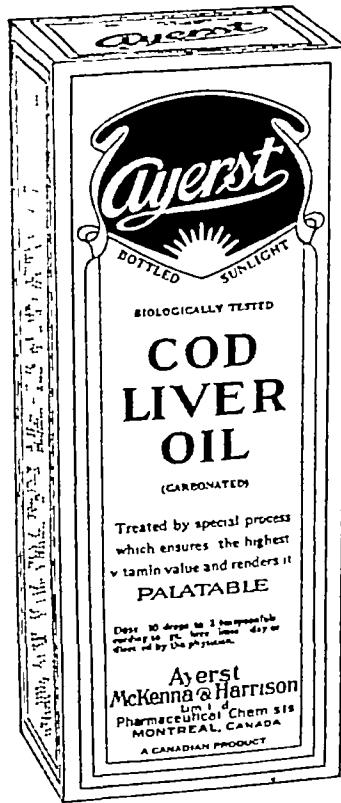
Columbia Medical Association, and also enjoys a similar privilege in the larger Canadian Medical Association. Dr Milne's work as a practitioner is widely known. He has earned the title of "Father of the Medical Association" in this province, and during his years of active practice he did very much to build up that body.

UNKNOWN FACTORS *in* COD LIVER OIL

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Further Research Needed

In the excitement and enthusiasm naturally produced by these truly progressive steps in vitamin research we should not lose sight of the fact that further research into the therapeutic value of Cod Liver Oil must be conducted before these new substances can be legitimately thought of as true substitutes for Cod Liver Oil.

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to the high place it now occupies in the medical life of the province. His labours in the cause of medical science well deserve the triple recognition with which he has been honoured. To him and his colleagues of the time, in 1886, is due the passage of the original Medical Act of the British Columbia Legislature, which insured that only qualified men would be permitted to practise in the province.

Dr Milne, some years ago, retired as Inspector of Immigration and Controller of Chinese Immigration at this port, a post which he occupied with entire satisfaction to the Dominion Government and the public at large. In this task and in the many other activities in which he engaged in connection with the Medical Health service of the Dominion Government he rendered always faithful and efficient duty and enjoyed the respect of all. He has been in British Columbia for nearly half a century and the local medical society is to be congratulated on having seized upon this fact to do him an honour which he so well deserves. The hope will be expressed by his numerous friends that he will be long spared to enjoy a rest which is the reward of the conscientious endeavour he has always shown." (*The Victoria Colonist*)

Dr J W Woodley, of the Pensions' Board, has recently been transferred to Calgary.

The new hospital at Nanaimo is now in operation
C H BASTIN

The new Medical & Dental Building is at last on the way to becoming more than a dream. The contractors are now busy on a fifteen storey building on Georgia Street, directly across the street from the new Canadian National Railway Hotel, work on which is to begin this month. Already the British Columbia and Vancouver Medical Associations are making arrangements for joint executive offices in the new building, and the Library of the Vancouver Medical Association will be on the same floor. The building is to have an auditorium in which it is hoped all medical meetings will be held. It should be ready for occupation towards the end of the summer of 1929.

A committee of the Vancouver Medical Association has been engaged during the past few weeks on a survey of the public health situation in the city having in view the changes and rearrangements that will be necessary when the amalgamation of the Municipalities of Point Grey and South Vancouver with the City of Vancouver takes effect at the beginning of the year.

J M PEARSON

UNITED STATES

Cancer Control and the American Public Health Association

An event of much importance to cancer control in the United States took place at Chicago in the week beginning October 15th, when the American Public Health Association, with an attendance of 2,400 members, mostly professional health workers, held its fifty seventh annual meeting.

The principal feature of the convention was a cancer symposium under the chairmanship of Dr Charles H Mayo, with addresses on early diagnosis, the epidemiological approach to cancer, heredity, a cancer clinic and what it is necessary to do about cancer. Dr Mayo himself expressed a belief in the inheritability of a susceptibility to cancer, and made a plea for a central organization which should serve as a clearing house for information on cancer.

The Association adopted the report of its Cancer Committee recommending that responsibility for leading and otherwise promoting cancer control activities in a state or community be definitely placed in the hands of a committee composed of, (a) the head of the public health department, (b) a representative elected by the organized medical profession, and (c) a representative of the American Society for the Control of Cancer.

The Committee on Administrative Practice of the American Public Health Association presented a revision of the Appraisal Form for city health work in which cancer is named as an activity to be taken fully into account in rating the value of public health work, listing it with sanitation, the control of communicable disease, etc.

Announcement was made of the appointment of a National Cancer Committee with members in all parts of the United States and a local Cancer Committee in Chicago to investigate new methods in fighting cancer and to serve as a centre of information in all phases of the cancer question.

A new committee on cancer statistics appointed by the Section on Vital Statistics to devise standard methods of collecting and expressing statistics of cancer in which the errors which have so often invalidated such records shall be as far as possible eliminated. It is possible that the work of this committee will entirely change existing statistical methods in relation to this disease.

A decision was made to devote an entire session of the Section on Statistics to cancer at the next annual meeting.

Septic Sore Throat in Lee, Mass

In a recent issue of the *Weekly Bulletin* of the Department of Health of the City of New York it is stated that an epidemic of septic sore throat broke out in Lee, Massachusetts, in July. Within two weeks there were nearly 600 cases, with thirty six deaths, in a population of about 4,000. The epidemic ended abruptly on the enforcement of a local order requiring pasteurization of milk, thus followed the recovery of hæmolytic streptococci from a cow and from a number of persons concerned with a dairy. Contact cases were very few.

Nine Medical Colleges Pass the Century Mark

The following tabulation will be of interest in noting the time of service of centenarian medical schools in the United States. This year the University of Pennsylvania School of Medicine begins the one hundred and sixty third session, Harvard University Medical School begins the one hundred and forty sixth session, University of Maryland School of Medicine and College of Physicians and Surgeons begins the one hundred and twenty second session, Columbia University College of Physicians and Surgeons begins the one hundred and twenty first session, Yale University School of Medicine begins the one hundred and fourth session, Jefferson Medical College begins the one hundred and fourth session. The University of Virginia Department of Medicine, the Medical College of the State of South Carolina, and the University of Georgia Medical Department begin their one hundredth session.—*Virginia Medical Monthly*

Gift to the University of Chicago

At the ceremonies connected with the dedication of the chapel of the University of Chicago, Mr John D Rockefeller, Jr, is reported to have said: "As president of the Laura Spelman Rockefeller Memorial I am authorized to offer to the university an endowment fund (of \$1,000,000) to be known as the Laura Spelman Rockefeller Memorial fund, to be used to promote the religious idealism of the students of the university, through the broadest and most liberal

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development of the spiritual forces centering and radiating from this chapel"—*Science*, Nov. 2, 1928

Biggs Professorship in Preventive Medicine

The Herman M. Biggs Memorial Fund gave more than \$55,000 recently to New York University and Bellevue Medical College to establish a professorship in preventive medicine in Dr. Biggs' name.

Alvarenga Prize of the College of Physicians and Surgeons

The College of Physicians of Philadelphia announces that the next award of the Alvarenga Prize, being the income for one year of the bequest of the late Senor Alvarenga, and amounting to about three hundred dollars, will be made on July 14, 1929, provided that an essay deemed by the Committee of Award to be worthy of the prize shall have been offered.

An essay intended for competition may be upon any subject in medicine, but must be accompanied by a written assurance from the author that it has not appeared previously in print, either in whole or in part, in any form, and has not been presented elsewhere in competition for a prize. The essay should represent an

addition to the knowledge and understanding of the subject based either upon original or literary research. It must be typewritten, and in English acceptable for publication without necessity for editing by the Committee. Any illustrations should be appropriate and correctly annotated with the text. Essays must be received by the Secretary of the College on or before May 1, 1929.

Each essay must be sent without signature, but must be plainly marked with a motto and be accompanied by a sealed envelope having on its outside the motto of the paper and within the name and address of the author.

It is a condition of competition that the successful essay or a copy of it shall remain in possession of the College, and that it may be published by the author with the consent of the College; other essays will be returned upon application within three months after the award.

The Alvarenga Prize for 1928 has been awarded to Drs. J. A. Paul and W. W. McClennahan, Philadelphia, for their essay entitled "A pathological study of the pleural and pulmonary lesions in rheumatic fever."

JOHN H. GAVIN, *Secretary*,
19 South 22d Street, Philadelphia, Pa.

GENERAL

The League of Nations on Syphilis

The Health Organization of the League of Nations has published the deliberations of a group of experts* on syphilis and cognate subjects held under its aegis at Geneva in October last. The matters discussed were chiefly (1) the prevention of syphilis, and (2) the teaching of modern methods of treatment, together with the standardization of drugs used.

It was pointed out that in the fight against syphilis the results have not been what the progress of syphilis therapy would give reason to suspect. This seems to be because the new discoveries are not exploited to their fullest extent, and no uniform generally recognized method of treatment exists.

It is suggested by the Committee, therefore, that a statistical compilation should be made regarding the various methods of treatment in clinics, dispensaries, etc., to permit of a better general idea of their efficacy. This compilation would be made by the various clinics sending to the Health Section of the League individual case records which could be worked up and the conclusions tabulated. This would require the reporting of a large number of cases, and also the working up of these cases over a given period of time. The Directors of Clinics would be asked also to prepare a general statement of the principles they applied in their treatment.

The importance of theoretical and practical training for students in syphilology was emphasized. In the view of the Committee, the state should facilitate in every way continuation courses in syphilology for general practitioners and medical officers.

As regards the drugs used in treatment of syphilis, the Committee was of the opinion that it is highly regrettable that bismuth preparations should be placed on the market which do not correspond to the manufacturers' indications. Certain countries have adopted the plan of officially testing these preparations, and this method should be made widely known, perhaps through the Health Organization of the League itself.

* These were of Professor Jadassohn of Breslau (chairman), Dr. Th. Madsen of Copenhagen, Colonel L. W. Harrison of London, Dr. Louis Queyrat of Paris, Dr. J. H. Stokes of Philadelphia, and Prof. C. Rasch of Copenhagen.

The Pan American Medical Association

The next congress of the Pan American Medical Association will be held in Havana, Cuba, from December 29, 1928, to January 3, 1929. The program which is being arranged by the President, Dr. Fred H. Albee, of New York City, will be a strong one, and will include four orations, upon the subjects of surgery, medicine, paediatrics, and tropical medicine.

Dr. William J. Mayo will give the Oration on Surgery, and Dr. Lewellys Barker, of Johns Hopkins University, the Oration on Medicine. Papers will be read in both Spanish and English.

This congress will be representative of the medical profession of the entire western hemisphere. Chapters of the Association have been and are being organized in various centres of North and Central America, as well as in the Antilles, all of which will be represented at the congress.

One of the recent accomplishments of the Pan American Medical Association is the establishment of the Pan American Hospital in New York City for the benefit of the Latin speaking peoples.

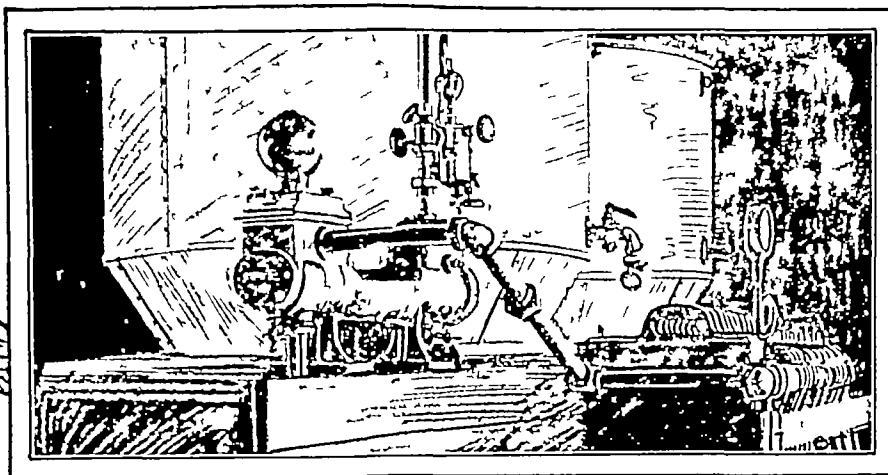
The Secretary is Dr. Conrad Berens, 30 E. 40th St., New York City.

Rockefeller Fellowships in Dublin University

Within the last few months the trustees of the Rockefeller Foundation have given their assent to a scheme for the establishment of research and teaching fellowships in connection with the medical school of Dublin University, and three fellowships, each worth £500 a year, have been provided. One came into being on October 1st, another will be created in October, 1929, and a third, two years later. The fellowships are residential, and each holder will be required to work in a department of Trinity College Medical School, mainly on research, but with some teaching as part of his duties. The present scheme is tentative in character, and will be subject to review after five years. Under the scheme Dr. R. A. Q. O'Meara, M.Sc., has been nominated as Rockefeller Foundation Fellow in Public Health, his appointment dating from October 1st.

The Nobel Prize

The Nobel Prize for Medicine for 1928 has been awarded to Professor Charles Nicolle, Director of the Pasteur Institute in Tunis, for his work in connection

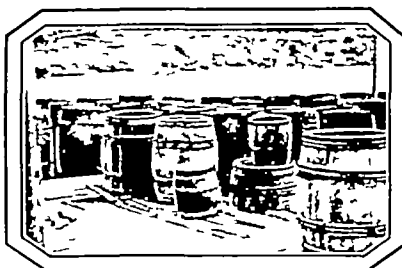


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Steam Rendering of Cod Livers

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This added to the fact that only about an hour's time elapses from the time the fish are



Vs Rotting

caught until the livers are in the rendering vats, accounts in large measure for the superiority of Mead's Standardized Cod Liver Oil.

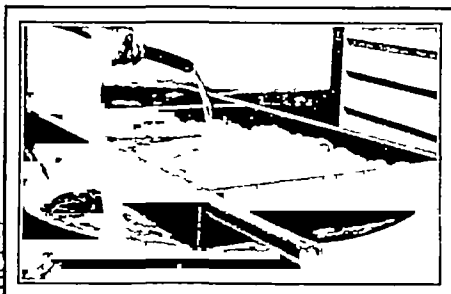
But before rendering, each liver is examined and thoroughly washed. Bile infected and small livers are thrown out. These are all preparatory precautions.

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*Above Center
Rotting Livers
Old Method*



*At Left
Washing Livers
Before Rendering*

*Samples and Literature
on Request*

and the red corpuscles. The principal components of the two phases are stated to be water, carbon dioxide, oxygen, hydrochloric acid, together with all other acids except proteins which are combined with base. The sum of all the bases (except protein) of the plasma, the sum of all the bases (except protein) of the cells, the sum of the proteins of plasma, the protein of the cells, these are the variables with which the book deals.

Three physiological functions of blood are considered: that of environment of the organs and tissues, those of vehicle for the transport of oxygen and carbonic acid between lungs and tissues and for transport of water and glucose, and that of regulation of temperature. The properties of the components of the blood are shown to be highly adapted to the function of preserving the constancy of the environment of cells and tissues and to the function of transporting carbonic acid and oxygen.

The book sets out the results of the author's own work and its scope is indicated by an enumeration of the headings under which the material is presented. These are, following the introductory chapters, acid base equilibrium, dissociation curves, cells and plasma, the physico-chemical system, the respiratory cycle, blood and circulation. Then follow chapters in which are considered variations in the composition of the blood during work, in disease, and of other species. A chapter entitled "Circulatory Adaptations" has to do with studies of the physiological changes in four men while riding a stationary bicycle.

In summing up, we find, to use to some extent the author's own words, that the respiratory activity of the blood has been related to certain aspects of general physiology, a quantitative study of the physico-chemical system blood has been made, the respiratory cycle of the blood has been analyzed, the relations between the properties of the blood and its cycle and between the properties of the blood and those of the circulation and respiration, have been stated. Further, there is a comparative quantitative description of the blood in rest and work, in health and disease, and from species to species, with a corresponding description of the respiratory cycle of blood, and, finally, a description of the mutual dependence of the properties of blood and of the circulation, respiration and metabolism. The style in which it is written and the order of presentation make the book readable and understandable. The treatment is mathematical throughout and the text is supplemented and illustrated by a profusion of charts and diagrams. The use of equations, contour line charts, and nomograms makes it possible to present many facts and relations in a clear and concise manner. To the physiologist who is mathematically inclined the book should be a delight. The mathematical treatment of a biological subject has its defects as well as its advantages, but in this case one is conscious only of the advantages.

A. W. DOWNS

Modern Problems in Neurology Kinnier Wilson, M.D. B.Sc. (Edn.), F.R.C.P. 364 pages, illustrated. Price 21/- net. Edward Arnold and Co., London, 1928.

The author has collected in this volume a series of his own papers which have appeared in journals in recent years, all dealing with subjects that have been prominent lately. The papers have been revised for this volume and new material has been incorporated in most instances.

In the first four chapters, Wilson considers the epilepsies, their variants and related phenomena, and gives simple and clear descriptions illustrated by cases. These studies will offer to many readers a new outlook and render interesting those conditions usually grouped together and described as the "disease" epilepsy, although some will find it difficult to acknowledge many of the conditions mentioned as being epileptic.

The Croonian Lectures of 1925 are presented as a series of five chapters headed "Disorders of Motility and Muscle Tone with special Reference to the *Corpus striatum*". The author attempts to delimit the functions of the *corpus striatum* by a consideration of case material, experimental work and clinical pathological evidence. The careful consideration of the facts, leading to definite statements of opinion, makes this section easy to read and should clear the minds of many on topics that have tended to become complex and confusing.

Other chapters are on the narcolepsies, pathological laughing and crying, the old motor system and the new, dysaesthesia and their neural correlates, with a final study on the Argyll Robertson pupil.

The volume leaves one with the feeling that the facts have been considered in a careful and authoritative fashion, and is the more satisfying in so far as it is easy and pleasing to read. The writer is particularly interesting in his references to subjective sensations and phenomena, and in the literary quotations with which they are illustrated.

The name of the writer is sufficient commendation to neurologists, who will prize this collected series of papers, but the content and style are such as to render the volume of value and interest to the general physician who wishes a clear statement of modern ideas on the above mentioned subjects.

DAVID SMITH

Clinical Electrocardiography Sir Thomas Lewis, M.D., F.R.S., D.Sc., F.R.C.P., C.B.E. Fourth edition. 128 pages, illustrated. Price 8s 6d. Shaw & Sons, Ltd., London, E.C.4.

This monograph like all the works of Sir Thomas Lewis is a model of concise and clear description. No words are wasted and the subject is clearly stated. The only important addition to previous editions is the section on coronary thrombosis, the latest clinical entity to be added to the list of recognizable heart defects. It is pointed out that electrocardiographic methods furnish diagnostic data of great value. Apart from this, few changes are noted. Here and there a few words are added or omitted in order to give improved elegance of expression to what is already clear.

In these days when electrocardiographic language colours all literature on heart disease the general practitioner is frequently bewildered by the many technical terms. He will find in this monograph exactly what he needs to aid him in interpreting the evidence of heart disease in so far as this special method is concerned.

K. A. MACKENZIE

Practical Surgery of the Abdomen George H. Julliy, M.D. Foreword by W. Wayne Babcock, M.D. 1275 pages, 1291 illustrations. Vol. I and II. Price \$17.75 net. F. A. Davis Co., Philadelphia, 1928.

The first thought one has after reading these volumes is the ease and rapidity with which the whole text may be covered. There are two reasons at least, first, the number and excellence of the illustrative drawings throughout the whole work, and second, the simple and lucid English employed. The work is not couched in the language of the professor who often, quite unconsciously, assumes the conventions of the Chair. Rather is it that of the pleasing conversationalist who, with a good conceit of his knowledge, tells how he is doing certain things and how others should be done. There is nothing strained, and a total absence of inhibition marks the literary style of the book.

Were this work confined to an actual description of operations alone it would be almost possible to read it through without the printed text, so rich is it in illustration of every operative step. But it is much more than a work on the mechanics of operations. The pre-operative and post-operative treatment of the patient

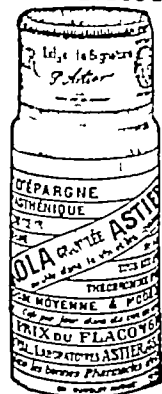
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The author's well reasoned conservatism on the subject of pylorotomy will appeal favourably to medical internists and to many surgeons. He rests his case, here as elsewhere, on sound physiological principles, and adds the evidence of much clinical experience to his contention.

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GEORGE H. MURPHY

Text-book of Pharmacology and Therapeutics or the Action of Drugs in Health and Disease. Arthur R. Cushny, M.A., M.D., LL.D., F.R.S. Ninth edition revised by C. W. Edmunds, A.B., M.D., and J. A. Gunn, M.A., M.D., D.Sc. 743 pages, 73 illustrations. Price \$6.00 net. Lea & Febiger, Philadelphia, 1928.

The revision of this excellent text book has been most conscientiously carried out by the joint revisers. The critical and literary flavour imparted to the book by Cushny has not been spoiled and the additions have served not only to bring it up to date as a readable text book of pharmacology, but also to bring it into harmony with the tenth revision of the U.S. Pharmacopœia. It can be strongly recommended to all members of the medical profession who wish to gain a modern knowledge of pharmacology and useful direction in the therapeutic application of such drugs as may be employed with advantage in medicine. It will furnish also the practitioner with a needed knowledge of the dangers of his materia medica and of toxicology. The book is excellently printed and bound and is a credit both to the publisher and to the authors.

V. E. HENDERSON

An Introduction to Experimental Pharmacology. Torald Sollmann, M.D., and Paul J. Hanzlik, M.D. 521 pages, illustrated. Price \$4.25. London and Philadelphia, W. B. Saunders Co., Canadian Agents, McAmish & Co., Toronto, 1928.

This book is an adaptation of Sollmann's well known Laboratory Guide in Pharmacology. It contains many excellent features which make it a standard book of reference for laboratory workers in physiology and pharmacology and indeed all those who experiment on the living animal. Any young teacher of pharmacology would find in it an excellent source of well thought out experiments for use in his classes.

V. E. HENDERSON

Laboratory Manual of Physiological Chemistry. D. Wright Wilson, Benjamin Rush Professor of Physiological Chemistry, University of Pennsylvania. 272 pages. Price \$3.50. Williams & Wilkins Co., Baltimore, 1928.

The practical work in biochemistry done by students

at the University of Pennsylvania is outlined in this book. A few experiments, well chosen, are inserted at the beginning, to refresh the student's mind on the inorganic constituents of biological materials, with particular reference to the principles of their quantitative estimation. The relationship of indicators to hydrogen ion concentration is next treated, and this is followed by a few experiments on the physical properties of colloids.

Part I treats of the carbohydrates qualitatively, with experiments on characteristic reactions only. Proteins are considered somewhat briefly, using albumin and globulin mainly as examples. Their properties are considered as one class and little emphasis is placed on separate groups. There are special detailed instructions for the preparation of cystine and tyrosine. The section on the chemistry of fats is particularly well chosen. It includes the best qualitative tests and quantitative determinations of iodine and saponification values.

Part II treats of the body tissues and fluids. The usual experiments on salivary, gastric and pancreatic digestions are given. Milk is examined qualitatively only. A few experiments are described with bone, muscle, yeast and bile. Blood is examined thoroughly, both qualitatively and quantitatively. Urine is treated likewise. There is a short section on the pathological constituents of urine. The volume ends with a few dietary deficiency experiments in outline.

The book is interleaved with blank pages. It represents a thorough course in biochemistry which has been well tried in the laboratory. It further lays emphasis on the essentials, which are not hidden in a mass of experimentation as so frequently occurs.

E. GORDON YOUNG

The Determination of Hydrogen Ions. William Mansfield Clark, M.A., Ph.D. Third edition. 717 pages with charts. Price \$6.50. Williams & Wilkins Co., Baltimore, 1928.

For those familiar with previous editions of this book the fact that a completely rewritten issue is at hand is all the review necessary.

For readers of a journal such as this, for whom, except those engaged in laboratory work, a general knowledge of its subject matter only is needed, the book may look so formidable on first glance as to inspire no further interest. It may be said, however, that there is so much in this volume we all should understand, in view of its importance to medicine, so much that it is possible to understand and enjoy without knowing higher mathematics, that it may be hoped that all our libraries at least will have a copy available.

Although of a more purely technical nature and of an entirely different type this book gives one the same interest that Bayliss', "General Physiology" does. The first few chapters may be read and understood without difficulty, and reading them with their very clear explanations of the foundations on which the work is built, of its theory, terms and methods, should permit a clear grasp of what may at first seem so very abstruse. Then, after having read the introduction to chapter V, who is there who would not wish to read to the end?

The more technical and practical parts are written fully and clearly. After the subject has been carefully led up to, the colorimetric method is defined and explained. The comparative values of the hydrogen and hydroquinone potentiometer and the sources of error are so plainly pointed out that, according to the work to be done, a correct choice of method and instrument should be easily made.

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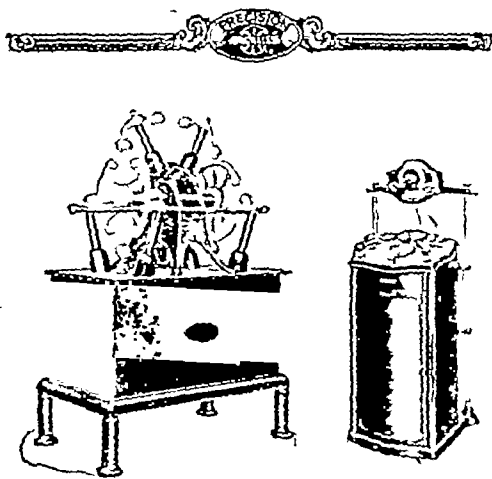
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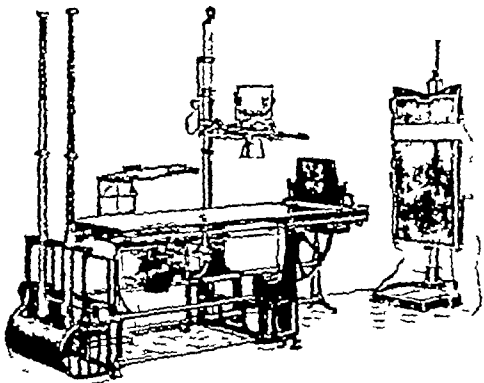
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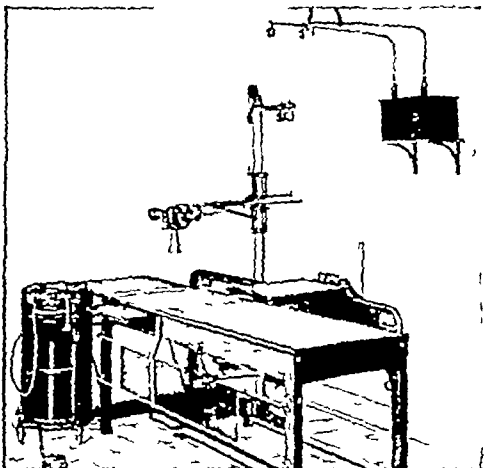
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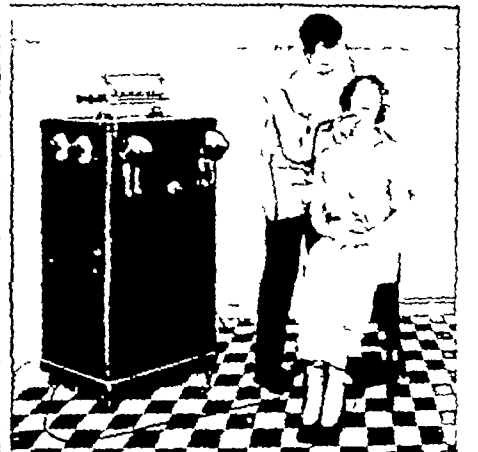
A keen observer attending Roentgen Ray and Physiotherapy meetings during the last year or two must have noted a circumstance of considerable interest. We are not referring to the remarkable progress in technique in these two branches of medicine, nor yet to the constant increase in the percentage of good results reported. Rather we have in mind the striking number of new names and new faces one meets with at every such gathering. To be sure, the men of great accomplishment who have for years devoted themselves to these newer fields are still seen and heard, and—let us truly hope—will always continue to give us the benefit of their knowledge and experience. Yet alongside of them, in ever increasing number, we see physicians who without attempting to specialize have acquired skill and familiarity with X Ray and Physiotherapy, and with it the interest that leads them to these meetings.

This is indeed an encouraging sign. It well establishes the fact that these fields are regarded today as much a part of medicine as the older forms of diagnosis and therapy. It is a logical development to which simplification of technique, and the consequent high uniformity of results obtained, has largely contributed. Equal share in the credit for it must be accorded modern equipment which has reached an extraordinary degree of perfection. It is difficult to appreciate the extent of the progress made unless you actually compare modern equipment with that available only a few short years ago. Large, cumbersome and often noisy pieces of machinery have given way to compact, smoothly operating and quiet apparatus that no longer require huge rooms to house it, and a combination physician, electrician, engineer and mechanic to operate it.

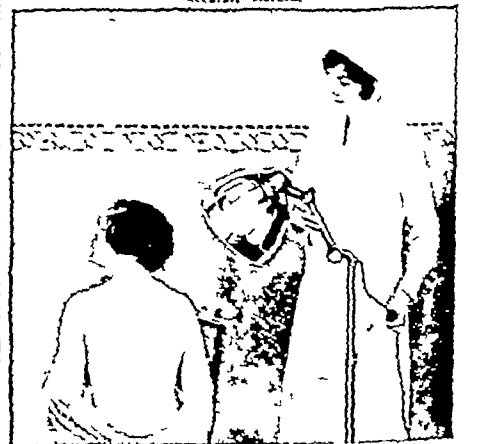
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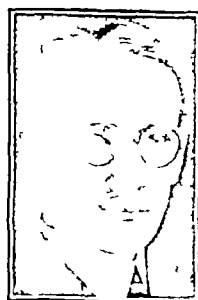
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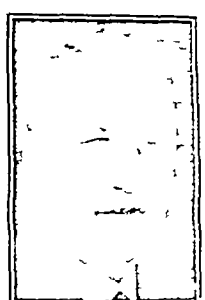
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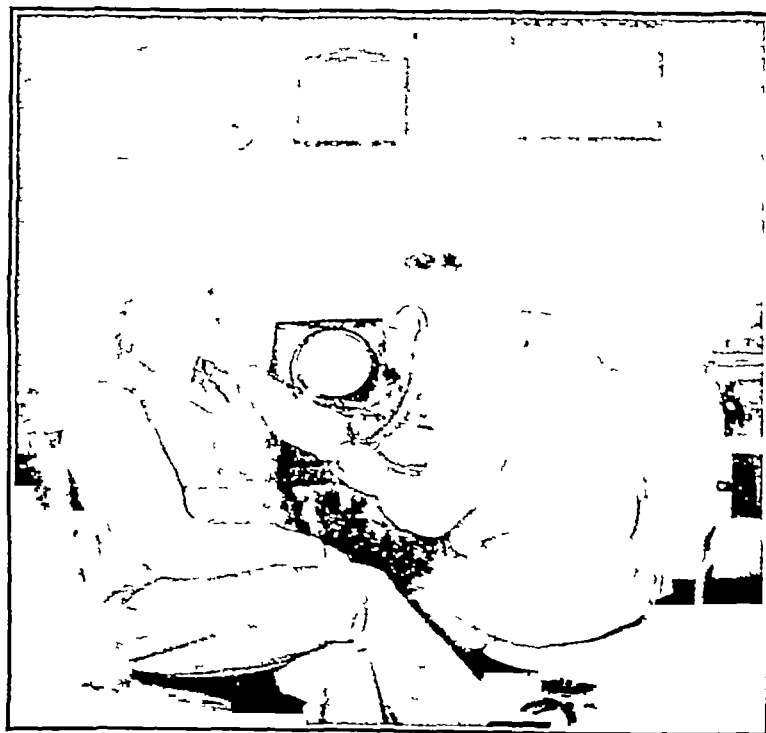
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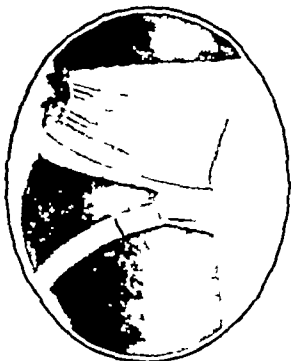
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In a recent address to the Medical Profession, a prominent physician deplored the lack of interest being shown by his profession in the treatment of foot ills, and advised every physician to include these cases within the scope of his practice

Diagnosis will often reveal that misalignments in the foot structure are the cause of illness. Let a cuneiform, scaphoid, metatarsal or anyone of the twenty-six bones in the foot slip out of its proper position, and a reflex action, sometimes far removed from the feet, will occur

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A candidate for examination must deliver to the General Secretary of the Canadian Medical Association prior to April 1, 1929, for transmission to the Secretary of the Royal College of Surgeons, the following certificates

- 1 Of matriculation at a "recognized University",
- 2 Of having completed the examinations in Anatomy and Physiology for degrees in Medicine and Surgery of a "recognized University",
- 3 Of having dissected in a "recognized" Medical School or Schools during six terms or eighteen months,

Note—Dissections during the regular vacations will be accepted provided the certificate shows that they have been performed under the superintendence of an authorized teacher in a "recognized" Medical School

- 4 Of having attended in a "recognized" Medical School or Schools —
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 - (b) a course of lectures on Physiology during two terms,
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For further information apply to —

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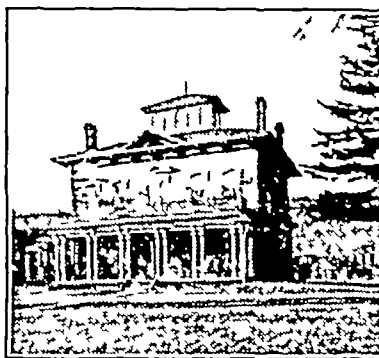
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The Special courses arranged for the coming months are —

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Cardiology	Jan 14 to Jan 25—National Hospital for Diseases of the Heart. All day. Fee £7 7s 0d (limited to 20).
Diseases of Children	Jan 14 to Jan 26—Queen's Hospital. All day. Fee £3 3s 0d.
Medicine, Surgery and the Specialities	Jan 23 to Feb 9—Prince of Wales's General Hospital Group. All day. Fee £5 5s 0d.
Psychological Medicine	Jan 29 to Feb 23—Bethlem Royal Hospital. Tues and Sats 11 a.m. Fee £1 1s 0d.

FEBRUARY

Gynaecology	Feb 11 to Feb 23—Chelsea Hospital for Women. Mornings and/or afternoons. Fee £5 5s 0d.
Dermatology	Feb 11 to Mar 9—St John's Hospital. Every afternoon. Fee £1 1s 0d. (Practical Pathological Demonstrations arranged. Fee £4 4s 0d.)
Diseases of the Chest	Feb 25 to Mar 2—Brompton Hospital. All day. Fee £3 3s 0d.
It is hoped to arrange later a course in Diseases of Children	February/March—The National Hospital, Queen Sq. (8 weeks)
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Orthopaedics	Mar 11 to Mar 23—Royal National Orthopaedic Hospital. All day. Fee £3 3s 0d. Minimum of 10.)
Ophthalmology	Mar 11 to Mar 23—Royal Eye Hospital. Afternoons only. Fee £1 1s 0d.

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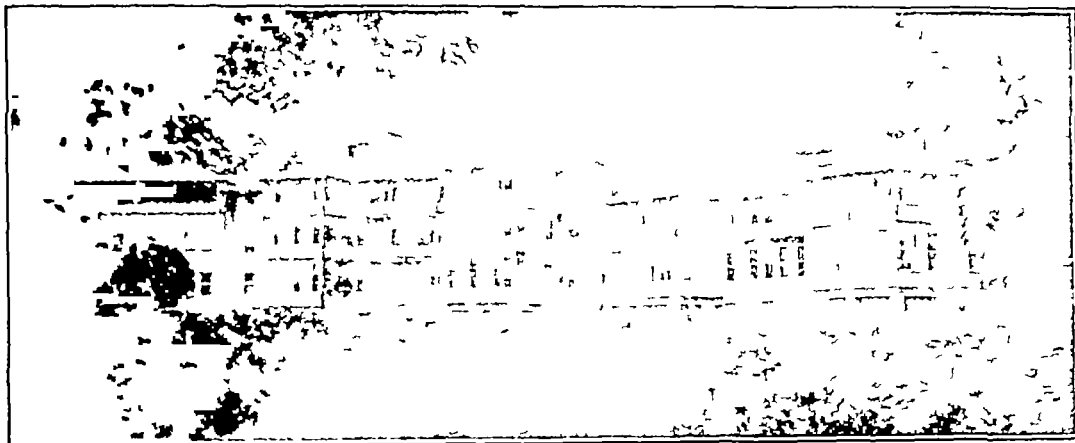
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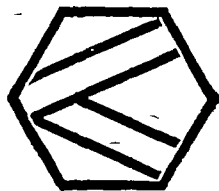
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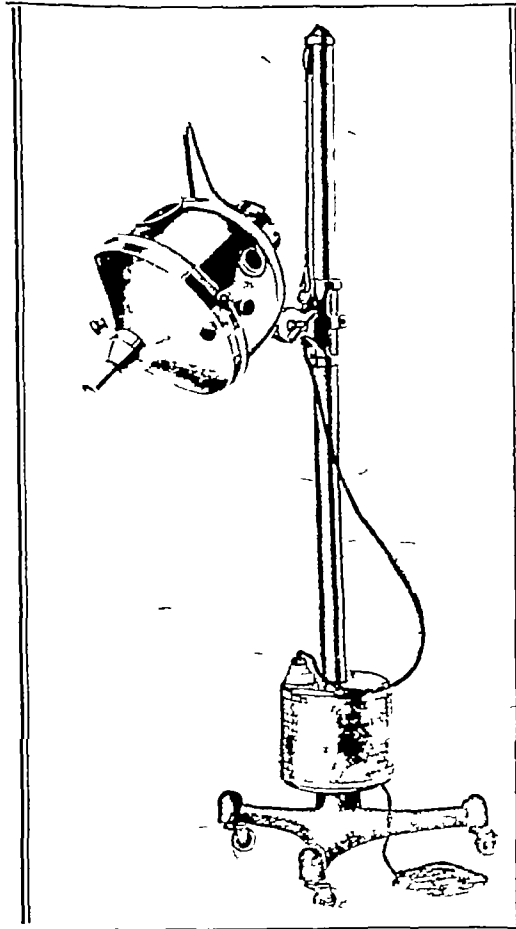
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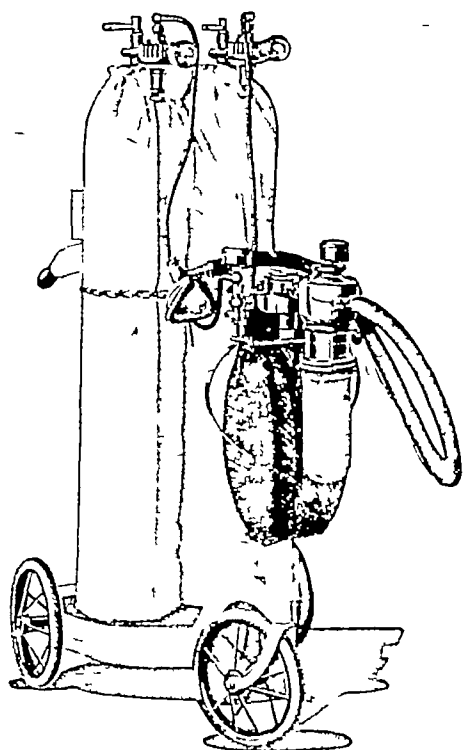
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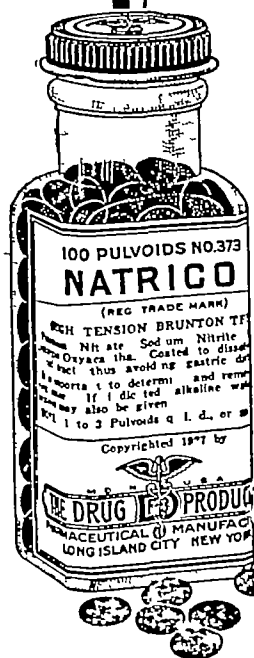
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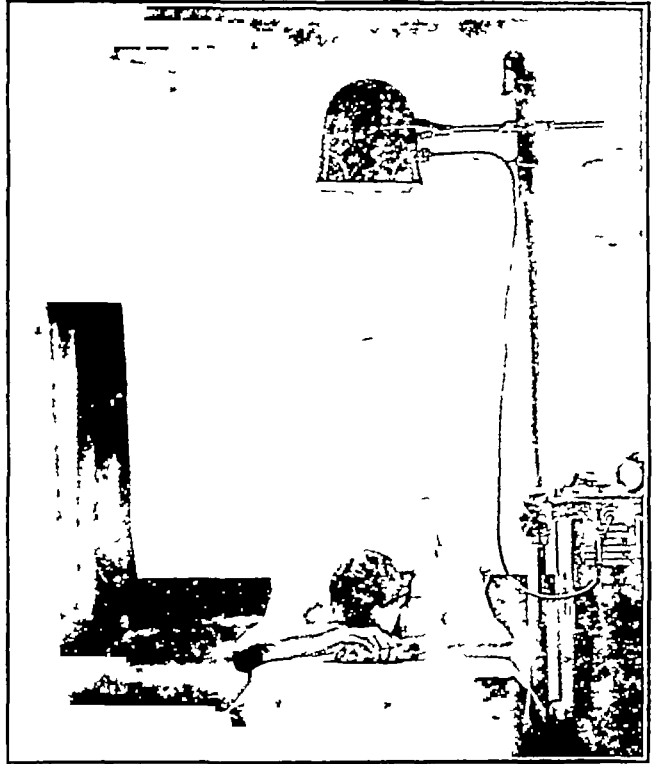
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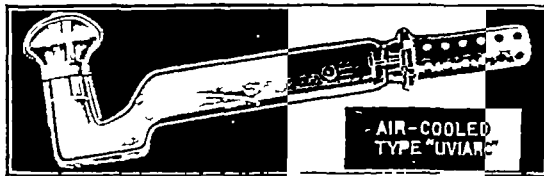
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From a paper read before the Southport Division of the British Medical Assn. March 30, 1928. (British Med. Jour. July 14, 1928)



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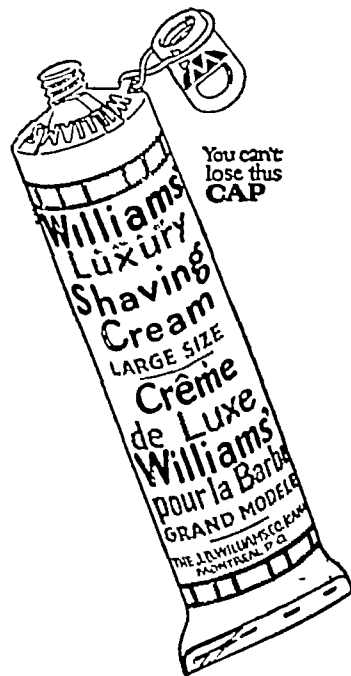
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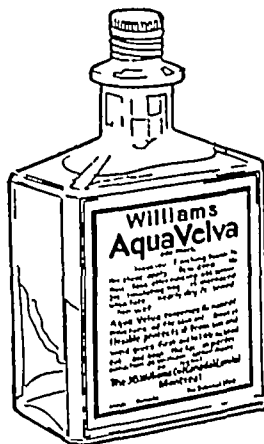
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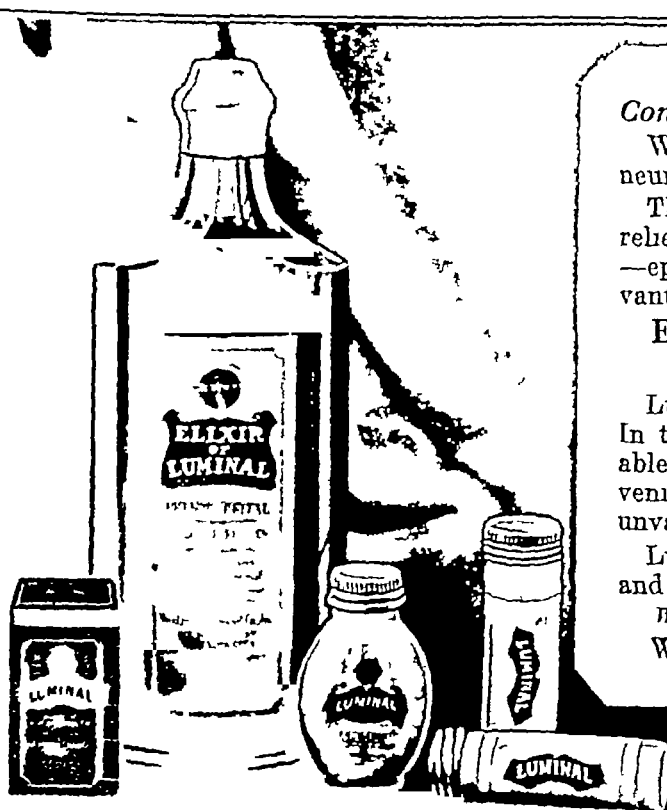
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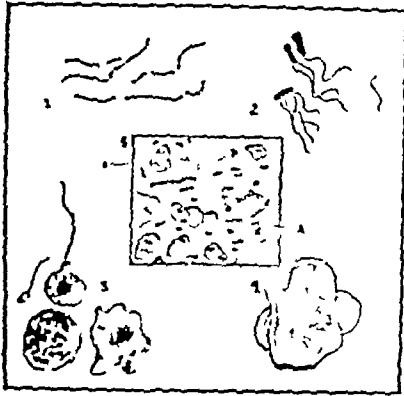


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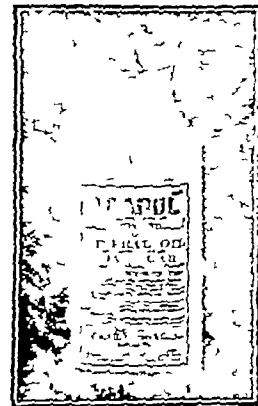
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1 Streptococcus 2 Bacillus typh
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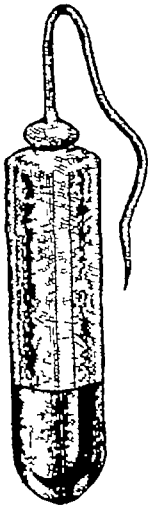
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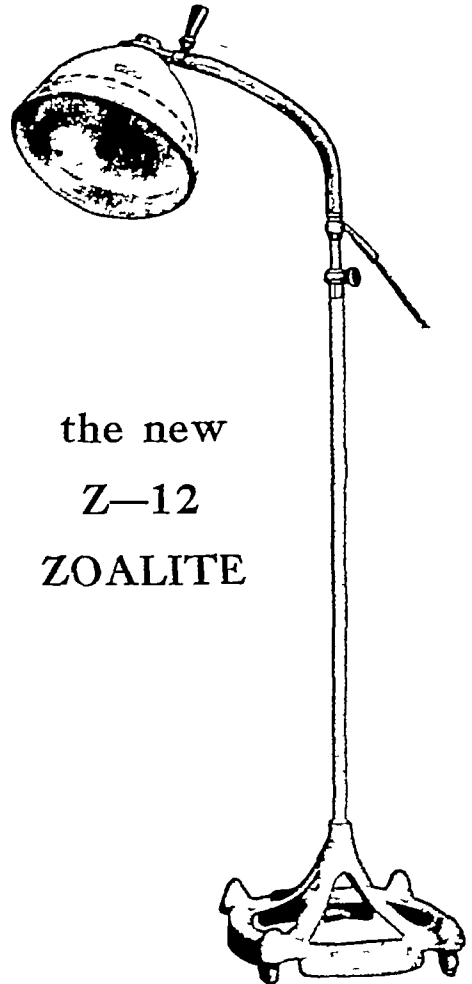
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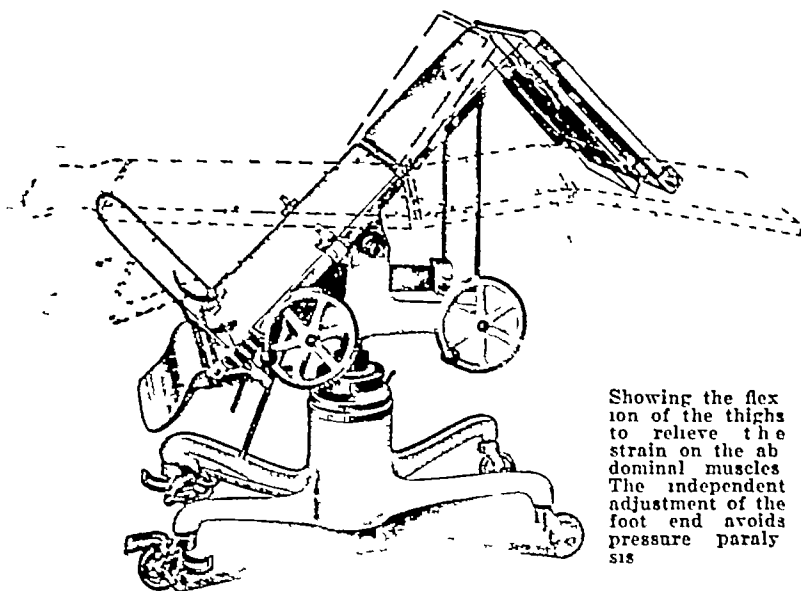
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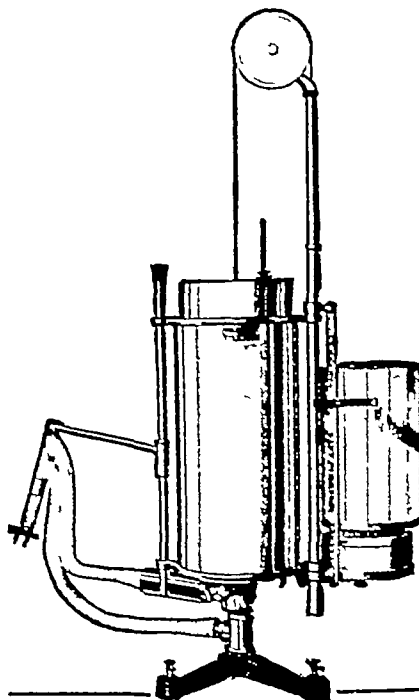
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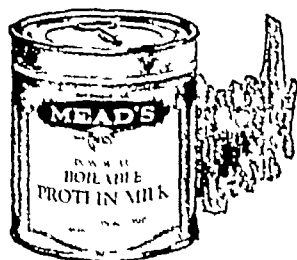
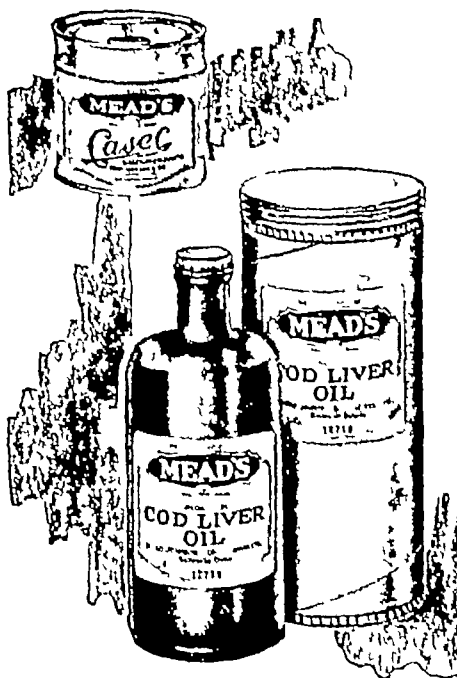
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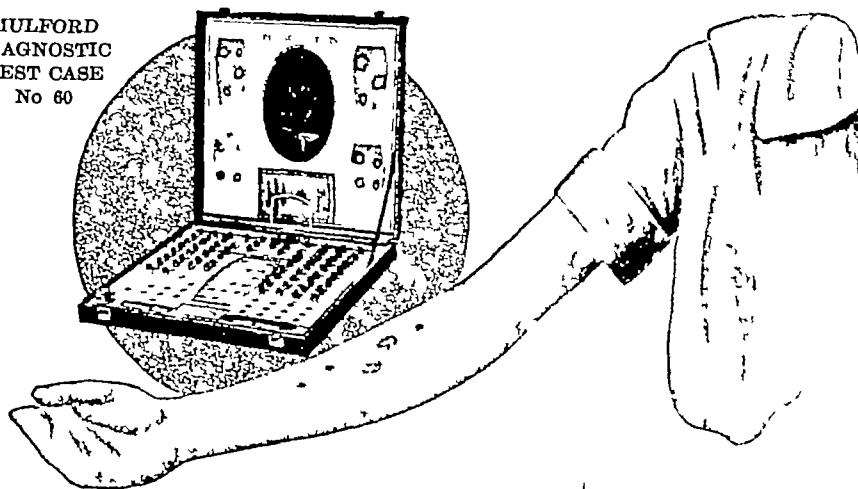
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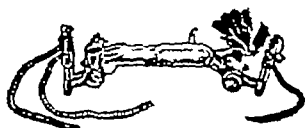
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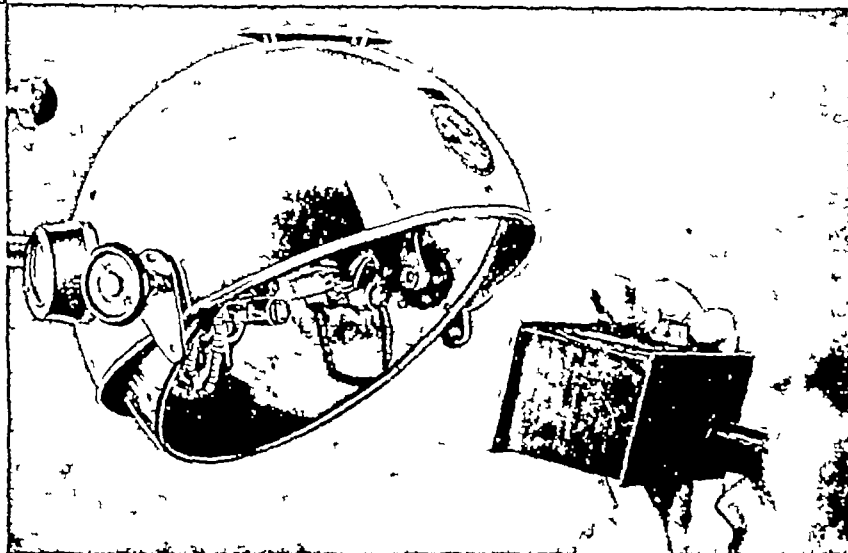
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An Address

ON

THE DUTY OF THE PHYSICIAN IN THE PRESENCE OF ECLAMPSIA*†

By CYRILLE JEANNIN, M D

Professor of Obstetrics in the University of Paris

Paris

ECLAMPSIA exists and will always exist in spite of the closest observation and the repeated examination of our patients. Its manifestations break out with disconcerting suddenness, and it is truly a terrible disease. The fact that the maternal mortality reaches 25 per cent and the fetal mortality 50 or even 70 per cent will indicate the great importance that this subject has for the practitioner.

When confronted with a patient whom one thinks to be the subject of eclampsia there are three important questions to ask oneself, and these questions will form the subject matter of this address:

1 Is it really a case of eclampsia? 2 What is the gravity of the particular case presented? 3 What course of action should be taken in the case in question?

I IS IT REALLY A CASE OF ECLAMPSIA?

This question may present itself for answer at three different times: (a) before the appearance of the attack, (b) during the attack, and (c) in the comatose period that follows the attack.

An important point is that an accurate diagnosis be made early, for it often enables the practitioner, by his conduct of the case, to prevent the onset of the attack. How can a positive

diagnosis be made before the appearance of the convulsive seizure? By the study of the prodromal features.

The prodromata are most particularly observed in primiparæ, but multiparæ may also manifest them. They appear most often during the last three months of pregnancy, not in those who are the subjects of chronic albuminuria or who have been treated for this affection, but in women who have not had albuminuria except for a few days or perhaps even for a few hours. Sometimes a very definite cause can be made out, such as an alimentary intoxication, exposure to cold, or overwork.

The study of the prodromata may be divided into four main groups, according to the way in which they manifest themselves.

Urinary apparatus. Albuminuria may appear in a very fulminating way, the quantity of albumen often rising very quickly to thirty or forty grammes, at other times increasing steadily for some days. The quantity of urine as a rule tends to be reduced, and this feature may be very pronounced. Such urine is always very dark and occasionally may be frankly bloody.

Circulatory system. Hypertension is a symptom, the highest point reaching often 20 or 25, or even more. Edema is extremely variable. It may affect the lower limbs, the upper limbs, sometimes may be absent, but is rarely lacking in the face.

Nervous system. The patient has a constant

* Delivered at the annual meeting of the Province of Quebec Medical Association at Sherbrooke, September 18, 1928.

† Published simultaneously with its appearance in *L'Union Médicale du Canada*. Translation by A. G. N.

and generalized headache. She complains of sleeplessness at night and somnolence during the day, she may even be somewhat stuporose. She suffers from trigeminal neuralgia, particularly affecting the ophthalmic branch of the nerve, she manifests sensory disturbances, notably visual, and ringing in the ears.

Digestive system. Vomiting is a constant prodromal symptom, and Chaussier has well described the epigastric pain, as like a bar, which has caused his name to be given to this particular sign.

The duration of these prodromal features is essentially variable, from a few hours to several days, and sometimes they are almost lacking. In certain cases, as the result of a treatment that abolishes the symptoms, these prodromata constitute alone the whole disease. This is the condition that Bar has called "eclampsisme." During this period, in order to make a differential diagnosis, it is necessary to distinguish uræmic crises from the simple alimentary intoxication due to digestive disturbances.

When you are in the presence of a patient undergoing a convulsive seizure diagnosis is easy, owing to the fact that the attacks are always characteristic.

Let us study first the positive case. The diagnosis will be summed up in the description of the attack, which develops invariably in three phases. The first phase is that of *invasion*. The woman suddenly manifests contractions of the face which last only a few seconds. The second phase is that of *tonic convulsions*. These convulsions are generalized throughout the body, the muscles of respiration only excepted, and have a variable duration of from six to ten seconds. The third phase is that of *clonic contractions*. In this phase it is above all the muscles of the sub-diaphragmatic region of the body that are affected: the upper limbs "beat the recall", the lower limbs remain immobile. The duration of the convulsions is about thirty seconds, which seem interminable hours to those around, for the patient is labouring and seems to suffer so much. In making the differential diagnosis one must eliminate (1) the epileptic seizure, during which the patient always voids clear urine, (2) a hysterical attack, which can be excluded by the disorder of the convulsions and the absence of all signs of disturbed function, and (3) a uræmic attack, which is often confused with eclampsia, but this error does not signify, for the treatment is the same. It is necessary,

in all cases which have to do with eclampsia, to take cognizance during the whole course of the disease of the hypertension, of the scantiness and dark colour of the urine, of the enormous amount of albumen in the urine.

In the presence of coma you will agree that there is no character pathognomonic of the eclamptic form. It will be necessary to base your diagnosis upon the history, the albuminuria, the scantiness of the urine, and the hypertension. You should remember to differentiate eclamptic coma from that of diabetes, alcoholism, uræmia, and from cerebral hæmorrhage and hetero-intoxication.

II WHAT IS THE GRAVITY OF THE CASE?

One must keep clearly in mind two most important ideas when it is desired to estimate the prognosis in eclampsia. Eclampsia is a very serious accident, a "malady of surprise," and a surprise of a disagreeable order, using the phrase that Tarnier used to delight in repeating to his pupils. One should always and in every case guard the prognosis for the mother, and especially for the fetus. However, cases can be differentiated, and one should weigh the several factors, such as, the time of onset of the eclampsia, the number of seizures, the coma, the urine, the hypertension, the temperature, and any complications that may arise, before one can estimate the outcome in a definite way.

When eclampsia appears in a woman but little advanced in pregnancy the case is always most grave, if the seizure comes on at the moment of labour the prognosis will be less serious than if earlier in the pregnancy, if the seizure occurs just subsequently to delivery the outlook is better, if the accouchement has preceded the attack by some hours the prognosis is still better.

When the patients have had from one to ten seizures one-quarter of them die, when they have had ten to twenty, one-third die, when more than twenty, one-half succumb. However, there are exceptions, for patients may die after the first or second attack, and the number of attacks always indicates the degree of severity, so that the prognosis should be guarded accordingly.

When the patient is in a state of coma the gravity is in proportion to its duration, if the coma is prolonged it involves a fatal issue.

The quantity of albumen that is present in the urine is not a valuable guide in the establishment of the prognosis. It is, rather, oliguria or anuria that are the grave factors, particularly if the

urine remains bloody. On the contrary, one would take a more favourable view in the presence of a urinary crisis. Polyuria is one of the good features, as it shows that the kidneys are eliminating satisfactorily.

Hypertension is always of unhappy augury, especially when it remains high, or rises again after bleeding.

Hyperpyrexia presents always a grave character, and the prognosis will be still more guarded in such a case.

Finally, the complication with icterus or cerebral hæmorrhage is always of grave import. The psychoses, which are generally of late appearance, are of little interest. Acute mania, however, can occasion considerable disorder, and melancholia often becomes chronic.

III WHAT PROCEDURE SHOULD BE ADOPTED?

I come now to the question of treatment, which is, without doubt, the matter that most interests the physician in general practice. The treatment is of two orders, it is *prophylactic*, and it is *curative* or symptomatic.

As soon as albuminuria appears in a gravid patient you should be on the look-out for eclampsia. Every day you should check in these cases the amount of urine discharged, the amount of albumen per litre, and the arterial tension. Should any of the symptoms appear, you should institute immediately a milk or even a water diet, rest in bed should the albumen be more than 0.50 centigrammes per litre, protection from the cold by means of warm clothing and flannel bands, and venesection if there is hypertension.

In spite of the most careful surveillance of your parturient patients there will be some who develop signs of eclampsia unexpectedly and you must treat them. In the prodromal period, before there has been a convulsive seizure, everything must be done to prevent one. There should be absolute rest in bed, a diet of lactose and water, a drastic purge, venesection if indicated by hypertension, which may enable you to avert the seizure. If in spite of this treatment the symptoms increase, you should bring on labour, provided that the woman is near term and that the child is viable. When a seizure threatens you can sometimes avert it by chloroform anæsthesia. The patient should be prevented from biting her tongue or otherwise injuring herself. Between the convulsive attacks the treatment will be variable, either medical, or obstetrical, or, exceptionally, surgical.

Medical treatment consists in lessening arterial tension by repeated bleeding, the intoxication of the patient should be lessened by a fluid diet, and by the injection of glucose serum to favour diuresis, finally, the nervous system must be quieted. Keep the patient in a dark room, remote from noise, forbid all visits except those of the nurse in charge. Prescribe small enemata of chloral, and in cases of great agitation you may be forced to administer sedatives in the form of morphine or opium.

The obstetrical treatment comes to the fore when the woman is in labour. Then, at all costs, the delivery should be accomplished as quickly as possible. On the contrary, when the woman is not yet in labour, when the fetus is not viable, and when the eclampsia is mild, it is clear that you should wait and be satisfied with medical treatment. Interfere only when the fetus is viable, when the eclampsia seems serious. In such cases the procedure of choice, in the interest as much of the mother as of the child, is the vaginal Cæsarian section.

The surgical treatment concerns almost without exception the specialist in urology, and is employed only in cases of anuria. Here decapsulation of the kidneys, or nephrotomy, is indicated.

Once the convulsive phase has passed, it is your duty to watch the patient very narrowly while in coma, in order to prevent her from falling out of bed. A water diet should be maintained at least for forty-eight hours, then allow a little milk and later a purely milk diet, until you can note that a urinary crisis has occurred and that there has been a considerable diminution in the albuminuria, when a vegetable regimen may be instituted.

CONCLUSIONS

Eclampsia is easy of diagnosis, all that is required is to note the quantity of urine passed in twenty-four hours by the patient with albuminuria, and to take the arterial tension frequently.

Eclampsia always involves a very serious prognosis and one often difficult to establish. It must be remembered that it is a "malady of surprise," and the surprise is of a disagreeable kind. As a complication it may come on in the late period.

Everything should be done to prevent the onset of convulsions. Here venesection plays an important role.

An Address

ON

THE VALUE OF PERIODIC HEALTH EXAMINATIONS*

By A. GRANT FLEMING, M.B.

Montreal

THE desire to escape from sickness and to achieve health is not a new one. No man ever wished to suffer from disease, and history records how mankind has evaded and fought disease as best it knew how.

We are today in a very enviable position as compared with the ancients. We have the knowledge which, if we would use and apply it, could cut in half the amount of sickness that now occurs in our country, thus greatly reducing human suffering, and the needless expense and other undesuabable companions of sickness. Our increase in knowledge has made us feel rather superior. We smile with pity upon those who believed in the supernatural cause of disease, in witchcraft, the healing power of the King's touch, the influence of the evil eye, and the relationship between the stars and disease. But are we superior? Could there be any greater ignorance, in the light of present-day knowledge, than that displayed by those who still deny that successful vaccination prevents smallpox, or who, if they do not deny it, fail to practise it, which amounts to the same thing. There are those who quibble also about the value of pasteurization as a means of making milk supplies safe. The present will assuredly seem absurd when it becomes historical.

In seeking an explanation to account for illness and death from preventable diseases and for the lack of health, we find that two of the chief factors are ignorance and laziness.

Health, it must be understood, implies not only freedom from disease, but a one hundred per cent development of the capacity of the individual. Doctor Donald B. Armstrong has defined health in these words—"The vigorous, beautiful, smooth-running efficient operation of mind and body, of the instincts and the will, in a harmony of purpose and accomplishment."

It is rather remarkable that so few attain com-

plete health, when we consider that beyond question, health is such a desirable possession—desirable, not in the sense that health in itself is an end in life, but rather because, as a condition of life, it makes possible achievements and happiness in work and play that without it are unobtainable. Health is therefore good both for the individual and for the community.

The modern public health movement grew out of a humane desire to lessen the human misery which had resulted from the industrial revolution. It was directed, at first, almost entirely to the improvement of living and working conditions—sanitation as we now call it. There were added later isolation and quarantine, i.e., the control of communicable diseases.

People, in general, will agree as to the need for pure water, for safe milk and pure food, and will even support the principle of quarantine, the latter, however, perhaps, with the mental reservation that it applies to the other man's home and family. In other words, we favour those measures which improve things for us, providing that they call for no personal effort. So it is that those health measures which ask for nothing from the individual, excepting money, for their provision and enforcement, come about and are carried on successfully. After all, taxes for health work are just as painless as any other taxes.

This sort of community health work does a great deal to protect citizens from disease that is carried by milk, water and food, and it does control, to a considerable extent, the communicable diseases which are spread from one human being to another. It has limitations, however, and it makes very little contribution towards the positive ideal of health, the one hundred per cent development of the physical and mental capacity.

Individual health depends essentially upon the individual's practice of what we call "personal hygiene." Even in our age of organization, we expect that we must consider our bath, our bed-

* Delivered at a public meeting of the Canadian Medical Association, Charlottetown, June 21, 1928.

time, and our open bed-room window as personal responsibilities. Modern inventions have given us conveniences that greatly assist and make reasonably easy the practice of personal hygiene. The opposition that followed the introduction of the first bath-tub on this continent, in Cincinnati in 1842, leads us to believe that bathing was not a very generally accepted practice. One can hardly doubt that since the bath-tub has become a common household fixture, its use has materially increased.

Children may practise hygiene because of parental discipline, or the stimulation of personal pride, or the competitive spirit of the group, as seen in such organizations as the Junior Red Cross.

As adults, we practise personal hygiene chiefly as an established habit carried from childhood, and continued, largely, because we have found that it makes us more comfortable. We continue to raise our bed-room window at night, not in the interest of health, but because we have found that we are more comfortable, that we feel better in the morning after having slept in a well-ventilated room. We know that if we do not wash our hands before eating, we are uncomfortable during the meal. This, I believe, is most encouraging. We may expect the majority of people to practise personal hygiene because they will like it because it will make them feel more comfortable. I do not believe we can ever expect that any considerable number of persons will do things they do not like just for the good of their own health, still less for the good of others. Most of us are as self-centred as the man who, according to the old doggerel, prayed —

"God bless me and my wife,
Our John and his wife,
Us four and no more Amen"

There is given to us, in the periodic health examination, an opportunity to secure a larger percentage of health. The periodic health examination by the family physician offers something that is not to be secured in any other way.

There is no lack of general health advice. Such advice is good and is valuable within limitations. Its value is limited because it is general. Of those who read it, or who hear it, many fail to see or understand the personal implication or the need for personal application. While none of us denies the desirability of health, so long as we feel well, so long as we can continue to participate in our favourite pleasures, we are

apt to think that such general health advice does not apply to us, but that it is intended for someone else.

It is desirable that everyone be accurately and fully informed concerning this most important subject of health. The value of such information depends upon its practice. One may know all about the human body, the causes of disease, and the maintenance of health, but unless this knowledge is put to work and made part of the daily life of the individual, it will be useless so far as protecting that individual is concerned. To know that fresh air and sunshine are good is only of academic interest to the person shut up in a dark room, it is of practical value when the window is opened, or when he goes outside. This is a very obvious example, and yet it is one which we see every day. While their number is decreasing, there are still thousands of people in our country who sleep in bed-rooms with windows tightly closed, at least, in winter. There are still many who shut the sun out of their homes rather than fade a carpet, although all of these have doubtless heard of the value of fresh air and sunlight. Most of us are just as foolish with regard to some one or other of the rules of personal hygiene. In most cases, it is because we have not understood or appreciated why these rules must be applied to our individual life. We need to have this pointed out to us, we need to be periodically checked up on it, and that is exactly what the family physician will do in the periodic health examination.

There has been a great reduction in mortality during the past few years, with the result that the average expectancy of life has been markedly increased. But because the reduction in mortality has been chiefly in the younger age group, there has been but little increase in life expectancy for those of forty years of age. This has not happened by chance. It is for the one simple reason that health conditions amongst children have received a great deal of attention in most places, and the reduction in sickness and deaths amongst infants and children has been in proportion to the work done. Look back over the health record of any city, and you will see written in the vital statistics, a remarkable story. After a number of years with the same high infant death-rate comes a period of rapid decline. You seek for the reason and you find two things. First, the establishment of well-baby clinics where mothers are taught the care of their babies, and second, the safeguarding of the milk

supply. The extent and rate of the reduction in infant deaths depend upon the extent and thoroughness of these two efforts. This infant hygiene work is a striking example of the use of knowledge. It is available for any community but it must be used if lives are to be saved. Simply to know about it, to talk about it, means nothing in the saving of lives.

The insidious beginnings of disease are not recognized by the sufferer. They are allowed to progress to serious conditions before the need for medical care is evident. It is left to the layman to determine the need for such care. If every person were examined each year, the earliest signs of disease would be detected, it would be possible to recommend the early treatment which always offers the best chance for cure. If not for actual cure, at least the arrest of the progress of the condition. Many mothers understand this, and infants are taken to private physicians and to well-baby clinics when they are apparently well. In schools, the well child is examined. This is, of course, what the adult should do. When well, try to keep well!

Even at the present time, with all the general information that has been disseminated, the percentage of tuberculosis cases who come to their physician with the disease well-advanced is appalling. The cancer case loses his chance of cure because he has waited to decide that he needs medical advice. The heart case, because of delay in securing advice, loses the chance of early care which would permit, in many instances, of his leading a full, if somewhat restricted, life. There is a great deal of truth in the observation that the man who lives longest is the one who, early in life, discovers that he has some abnormality, and so lives a careful, hygienic life. Is it not reasonable to say that during the period when proper treatment offers so much the oppor-

tunity for revealing the need for such treatment should not be lost, and is it not rather absurd to ask the layman to decide upon the need for treatment during the early period of disease, when it is most difficult to diagnose?

The discovery of defects or of early disease is, however, the lesser value of periodic health examinations. Although a large percentage of apparently well individuals will be found with physical defects that require treatment, with early symptoms of disease whose cure or arrest depends upon prompt action, it is the need for advice concerning the maintenance of health that is the more important point. There are very few who do not need personal advice in the matter of diet, exercise, rest and relaxation, elimination, and other phases of personal hygiene. There are few who might not have better health than they now possess. We are all different, and just what one needs, what another neglects, and what still another abuses, are the things that must be discovered and regarding which advice must be given. This type of advice needs behind it the same scientific knowledge and thought as does the prescribing of remedies for the acutely ill.

The family physician, because of his knowledge of economic, social, and home conditions, and because confidence is reposed in him, is the best qualified for this service.

Amongst limited groups of adults, the need for, and the results of, periodic examinations have been proved. Life Insurance Companies have found it good business to pay for such examinations for their policy-holders. The opportunity is open to all to safeguard their lives, to attain greater efficiency, by securing for themselves a periodic health examination.

Make periodic health examinations an axiom of your lives!

Anti-Mouth-Breathing Mask—This is a device for keeping the mouth closed after operations for producing an adequate airway. A wax impression is taken of the lower half of the patient's face. From this a cast is made. From the cast a thin metal mask is modelled. This fits accurately the lower half of patient's face from the lower margin of the anterior nares to below the chin. Suitable holes are drilled in the metal. These

enable a lint lining to be tacked on and two thin elastic bands attached. The mask is held in position by these elastic bands, which are fixed to a head band of stout webbing by means of "hooks and eyes". The mask has been used by exhibitor for the past six years and found very efficient.—T. B. Jobson, M.D., *Proc. Roy. Soc. Med.*, 1928, LXI, 179S.

SMALLPOX VACCINATION*

By R. D. DEFRIES, M.D., D.P.H., AND N. C. MCKINNON, M.B.,

Toronto

IN 1796 Edward Jenner introduced the practice of vaccination. His first vaccination consisted in rubbing into a tiny scratch on the arm of an eight-year old boy a little cow-pox material, taken from a vesicle on the hand of a dairymaid who had contracted the disease in milking cows suffering from cow-pox. In the widespread use of vaccination which followed, several methods for obtaining supplies of vaccine were employed. The most popular, which continued in general use until practically the close of the nineteenth century, was to collect the vaccine from the arm of a previously vaccinated person at the time that the vesicle was well developed. To provide for emergency supplies, crusts from previous vaccination lesions were collected and stored. These methods of "arm to arm" vaccination, although efficient, were open to serious criticism (Some of the common objections to vaccination as raised by anti-vaccinationists to-day are based on these old practices, these persons continue to reiterate the possibility of transmitting disease by vaccination, but such a danger existed only when the old methods were employed). Later, calves were used to propagate the virus and the vaccination of children in large numbers at one time was made possible in special stations provided for this purpose. In these stations the vaccinations were performed by the direct transfer of the vaccine from the vaccinated calf to the arms of the children.

Negri in 1842, instead of inoculating cows with vaccine material collected from human beings, inoculated cows with natural cow-pox and transferred the vaccine from cow to cow in series. By 1865 vaccine was produced by animal vaccination in a number of countries but this method was not employed in England until 1881. Following the findings of English Royal Commission in 1896, "arm to arm" vaccination was replaced officially by the use of "bovine" vaccine. In addition to direct vaccination from the

vaccinated areas in cows, the "lymph," so-called, was preserved by drying on small pieces of wood, bone or celluloid, which afforded a convenient means for distribution. The preparation of these "vaccine points" consisted simply of rupturing the vesicles, after a superficial cleansing of the surface, and, by means of a small brush, transferring the vesicle contents to the "points" of bone, wood or celluloid. After drying, the points were ready for distribution. Obviously no bacteriological control could be exercised on vaccine prepared in this manner and the method was subject to this criticism. In 1891 Copeman made a most important advance in the preparation of vaccine by establishing the use of glycerin as a diluent. This permitted not only of much greater production, as the lesions of the calf could be scraped thoroughly and the collected pulp ground in glycerin, but also of bacteriological control of vaccine. It was shown that glycerin serves as a good preservative of the virus and at the same time, in the course of some weeks, destroys extraneous bacteria. With its use, vaccine could be kept until bacteriological examination showed it to be free from pathogenic organisms. At the same time sterile glass capillary tubes as containers for the glycerinated vaccine were introduced into general use. During the following years other antiseptics, including phenol, have been found to be of additional value in the preparation of vaccine.

Extensive bacteriological studies have been made during recent years of the glycerinated vaccine and tests have been established which ensure to physicians vaccine, not only free from all pathogenic bacteria, but at the same time of high potency.

PREPARATION OF VACCINE VIRUS

Vaccine virus is prepared now in commercial quantities by the use of healthy calves, which are carefully selected and are kept under observation for eight days before being vaccinated. Tuberculin testing is carried out as a routine measure during this period of observa-

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School of Hygiene and Communicable Diseases, University of Toronto

tion and every precaution is taken to make sure that only healthy calves are used

The calf vaccination is performed in the following manner. First, the calf is clipped and the whole body is cleaned by scrubbing with warm water and soap. It is then placed on a suitable table in such a position that the entire abdominal area and inner side of the thighs are exposed. These areas are prepared for vaccination by shaving off the hair and thoroughly cleansing the skin with soap and hot water followed by washing with sterile water, drying, and the application of 95 per cent alcohol to the entire surface. The surgically clean skin is protected at once by sterile towels. The area is further protected from contamination by covering all other parts of the body of the calf, including the legs, with clean cotton. At this stage the calf is moved into an adjoining room which may be spoken of as the operating room and in which the actual vaccination is performed. This consists of making a series of light scratches as close together as possible over the whole abdominal area and inner side of the thighs. It is important that the scratches should not be made deep enough to draw blood. As in human vaccination, the best results are obtained if the scratches are lightly made and just sufficient to break the skin. Vaccine virus is now applied and rubbed into the scratches by using a smooth instrument, such as an ordinary ebony spatula. The vaccine used is usually spoken of as "seed"* vaccine and it is appreciated that special care must be exercised in its preparation.

After vaccinating, the area is protected until the surface is thoroughly dried and the calf is then placed in a special stall or room where it is kept scrupulously clean, excreta being at once removed and every precaution taken to prevent the contamination of the vaccinated area. In the Connaught Laboratories, it has been found of advantage to spray the vaccinated area daily with a 1 in 500 solution of brilliant green. When the vaccine vesicles are fully developed, usually in six days, the calf is washed, then chloroformed and exsanguinated.

The vaccinated area is repeatedly washed with warm water until the superficial crust material is softened and entirely removed. This is an essential step in the preparation of a vaccine of low bacterial content. The pulp, so called, is now removed by using a spoon curette. A post-mortem examination is made of each calf and if evidence of any disease is found the pulp is discarded. The next step consists in emulsifying this pulp by grinding with a 50 per cent solution of sterile glycerin containing 0.5 per cent of phenol, in the proportion of one part of pulp to four parts of glycerin-phenol solution. The emulsified pulp, or as it can now be called glycerimized vaccine, is stored at about zero, centigrade, until distributed. During this time potency tests are completed. This period of "ripening" requires usually from one to two months.

During this period bacteriological counts are made at regular intervals and if the vaccine has been prepared under proper conditions, the bacterial count rapidly falls. Tests are made to detect the possible presence of tetanus or of any other pathogenic bacteria. These tests are made by suitable methods of culture of the vaccine emulsion and by inoculation of guinea pigs, both with broth cultures and with the vaccine emulsion itself. As a result of the action of the glycerin and phenol during the period of storage, in a vaccine which has been propagated and collected under proper conditions, the contaminating bacteria are so reduced in number that often several capillary tubes must be cultured before the presence of a single organism is shown.

It is essential also that the potency of the vaccine be carefully determined, not only before it is distributed, but at regular intervals for a period of three months after its distribution during which time, if kept in a refrigerator, the vaccine should give satisfactory results. If evidence is found in the laboratory that the vaccine so stored is becoming inert the vaccine is recalled. The potency of the vaccine is determined by vaccinating rabbits with various dilutions. A vaccine giving a good "take" (a strong confluent reaction) when diluted with saline in the proportion of 1 part of vaccine to 250 parts of saline is considered to be of satisfactory potency. Confirmatory evidence may be obtained by observ-

* In reference to the source of the seed virus used on this continent, Dr. W. H. Park, Director of the Bureau of Laboratories, Department of Health, New York City, has stated that it is probable that this virus is the strain originally brought to America in 1874 from the Vaccine Establishment of the Local Government Board of Great Britain.

ing the percentage of "takes" in a group of children not previously vaccinated

When the vaccine has been shown to be of satisfactory potency, of minimum bacterial content, and free from possible pathogenic organisms, it is filled into sterile capillary tubes. These tubes are examined, sealed and packaged, care being taken that during this procedure the vaccine is kept cold. As a final precautionary measure a number of tubes out of every filling are tested bacteriologically before the tubes are released for distribution.

TECHNIQUE OF VACCINATING

Any rational opposition to vaccination to-day can be attributed largely to the technique used by some vaccinators and to improper after-care. Jenner in his original description of vaccination, stressed the necessity for avoiding unnecessary trauma. During the nineteenth century, when vaccine was limited in quantity and of uncertain potency, vaccinators introduced long incisions and multiple abraded areas into the practice of vaccination. Thus, there developed the methods of abrading or cross-hatching of from two to four areas of skin varying from one-quarter to one-half inch in diameter. The resultant "takes" were accompanied by many sore arms. Support of these methods was obtained from certain statistical data and the duration of immunity was considered to be dependent on the size and number of scars. More recent work, however, of both experimental and statistical nature, has shown, firstly, that the duration of the immunity is not dependent on the amount of scar, and secondly, that most of the severe reactions and complications are due to unnecessary trauma in vaccinating. In fact, the size of a scar indicates usually the amount of secondary infection, rather than the degree of immunity. The importance of these observations is being recognized only slowly. Although in Germany cross-hatching was discredited and its use forbidden as early as 1897, this method is still practised to some extent even in Canada. Modern methods of vaccination practically eliminate severe reactions, secondary infections, and large scars.

The best time to vaccinate is in the first year of life because the general reaction to vaccination at that time is much less than later. The infant, as a rule, shows no evidence whatever of

reaction, beyond the local lesion. In addition, the site can be kept at rest, clean and dry, conditions which are ideal for a vaccination to run a normal course. It is, of course, unwise under ordinary circumstances to vaccinate any child or adult showing fever or other symptoms of illness.

The immunity following vaccination is not necessarily of a permanent character. This fact was established as early as 1805. Re-vaccination is, therefore, essential. The time at which re-vaccination becomes necessary naturally depends on the duration of the immunity. As school children who have been vaccinated in infancy frequently give reactions closely resembling typical takes, it is evident that the immunity following a primary vaccination may not last longer than a few years. Various estimates have been made of the duration of this immunity but the frequently quoted period of seven years must be considered only as an average period. There is among individuals a wide variation in the duration of the immunity. Some persons present typical takes on re-vaccination within one or two years after a primary vaccination, whereas the majority of individuals retain their immunity for a much longer period. The immunity following a second successful vaccination is probably of longer duration than that following a primary vaccination. There is, however, ample evidence from clinical experience with smallpox in recent epidemics that even one vaccination performed in infancy has protected individuals to some degree when exposed to virulent smallpox many years later. This is shown by the fact that in the Windsor, Ontario, epidemic of 1924, although 32 persons died from this disease out of 67 who were attacked, not one death occurred among those who had ever been vaccinated. On the few vaccinated individuals who developed the disease, the attack was greatly modified in severity, even though only one vaccination had been performed many years previously. Since no accurate estimate can be made of the duration of immunity, re-vaccination with potent virus affords the only means of determining the immunity status of an individual. As a general rule, vaccination in infancy should be followed by re-vaccination early in school life and again at the occurrence of an epidemic.

The best site for vaccination is the arm above the insertion of the deltoid muscle, because this

part can be most conveniently kept clean, dry, and at rest, and is not liable to injury or irritation. These conditions are not obtained as readily on the leg which, as a vaccination site, has other disadvantages in its circulation and lymph drainage.

Numerous modifications of the established methods have been suggested during the past few years. These methods have the common objective of reducing to a minimum the amount of trauma in vaccinating, and, by so doing, avoiding unnecessary reaction with the formation of large scars. The methods outlined below are representative of the modern technique and are widely used.

The Short Scratch — Cleanse the site with soap and water, alcohol, or ether, and allow it to dry thoroughly. Using a sterile needle, make three short scratches from $1/16$ to $1/8$ of an inch in length, about the size of the printed comma on this page, the scratches separated from each other by $1\frac{1}{2}$ inches.

These three scratches are most conveniently arranged at the points of a triangle as shown in the accompanying diagram. Wipe the capillary tube of vaccine with an alcohol swab and allow it to dry. Break

off both tips without contaminating the broken ends of the main portion, and push one end into the rubber bulb until the diaphragm within the bulb is punctured. Expel the vaccine on the two upper scratches (2, 3). One capillary tube contains enough vaccine for both. Gently rub the vaccine into the two scratches with the side of the needle. Allow sufficient time for the vaccine to dry. The lower scratch serves as a "control," the value of which will be appreciated in interpreting the vaccination reactions.

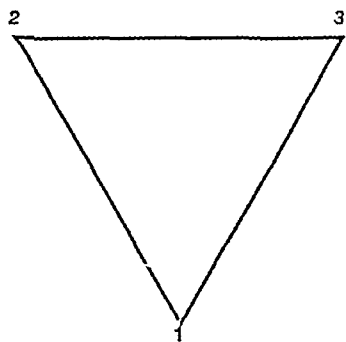
The Puncture Method — Cleanse the site as previously described. Holding the sterile needle parallel to the arm, push the point into the skin for a distance of about $1/16$ inch at a point on the arm corresponding to the lower angle of the triangle as indicated in the diagram. This is the "control puncture." Now, on the sites on the arm corresponding to the two upper angles (2 and 3) of the triangle in the diagram,

place a drop of vaccine. Holding the needle parallel as before, push the point through each drop into the skin for a distance of about $1/16$ of an inch. It is essential that the needle be held practically parallel and not at right angles to the arm, and that the point of the needle enter just between the skin layers. The vaccine may now be wiped off. Some vaccinators prefer to make two or more punctures through a single drop.

The method of using a short scratch ($1/16$ inch) at one place and a puncture at another, separated by one and one-half inches, has been found a very useful combination. Controls for each should be made first.

The question may be asked as to the reason for recommending that two vaccinations be made as a routine procedure either by scratch or puncture, or one scratch and one puncture. The answer to this is that failure to "take" is more often reported when only one scratch, or more particularly when one puncture, has been used. Failures in vaccination are due often to the vaccine being of a reduced potency or actually inert as a result of prolonged storage or exposure to heat in transportation. To overcome this possibility of failure it is wise to make two vaccinations, as the chance of failure is reduced and the probability of a successful take is increased. The arm of an infant on account of its small size, should usually be subjected to one vaccination only. Revaccination should always be performed by vaccination in two areas. Especially is this important at times of an epidemic.

The short scratch method gives a very high percentage of "takes," the local reaction is of minimum size and the final scar does not exceed $1/4$ of an inch in diameter. By making two scratches sufficiently far apart, the two lesions do not coalesce even in primary vaccinations and the healing proceeds as quickly as if only one area had been vaccinated. In making the scratch before the application of the vaccine, the vaccinator is able to control better its length and depth. This is a distinct advantage. Objections which are sometimes raised to this method are due to the lack of appreciation of the actual size of the scratch described, namely, $1/16$ to $1/8$ of an inch in length. Thus, the measurement of scratches supposed to be of the proper size shows that



these are often from 1/4 to 1/2 of an inch in length

The puncture method gives a reaction and final scar very similar to that of the short scratch. It has not given, however, in our experience, as high a percentage of takes. An increased percentage of takes is obtained by making two or more punctures through a single drop, (that is, the multiple puncture method) but this increases, too, the size of the individual reaction and thereby defeats an aim of modern technique, namely, to have a minimum reaction. The occasional failure with the single puncture method is due either to the fact that the needle point has not satisfactorily entered the skin or that the virus used was of reduced potency. When a fully potent vaccine is used, single puncture vaccination will probably give as high a percentage of takes in primary vaccinations as a short scratch. As vaccine, however, is often of reduced potency due to storage and untoward conditions, it is evident that a higher percentage of takes may occur with the scratch method as this method gives an opportunity for more virus to enter.

The puncture method elicits better an "immediate" reaction on re-vaccinations. This will be discussed later. For these reasons there are advantages in vaccinating by a short scratch in one area and by a puncture in a second area, separating the two vaccinations by 1½ inches. The two small individual lesions, even in primary vaccinations, give rise to no more general reaction than does one, and, as has been said, do not coalesce but heal as quickly as one small area and much more quickly than a large area.

AFTER CARE

The essentials in the after care of vaccination are that the area be kept clean and dry and that there be no interference with the circulation or with the normal evaporation from the area. Anything which interferes even in the slightest degree with either of these produces conditions favourable to secondary infection. The best condition is therefore obtained when no dressing is used. Even clean gauze, pinned on the inner surface of the sleeve, if not actually required, may serve only as a source of irritation. In cases where the vaccination cannot be kept clean without a

dressing, a sterile gauze dressing may be applied loosely to the arm. Adhesive plaster or shields of any description, should be sedulously avoided. Clinical and experimental investigation has shown that the vaccination lesions under such dressings, due to interference with the circulation and evaporation, tend to increase to the whole size of the area covered and conditions become ideal for secondary infection. Even when adhesive is employed to fasten gauze, only narrow strips should be used to fasten the corners of the dressing. These should be placed diagonally across the arm, rather than around it, and at some distance from the vaccination. If the lesion ruptures and serum exudes, sterile gauze should be applied to the site with the precautions indicated. Complete rest is indicated when there is fever, headache, malaise, or other symptoms of a general reaction.

VACCINE REACTIONS AND THEIR INTERPRETATION

In addition to the characteristic "take" following vaccination two other reactions are recognized following re-vaccination. These two reactions have been described as the immediate reaction or the reaction of immunity, and the accelerated or vaccinoid reaction. One of the underlying factors which determines the character of the reaction following re-vaccination is the degree of immunity possessed by an individual. It is obvious that the previous history of an individual regarding successful vaccination or smallpox should be taken into consideration in interpreting the reactions. A primary vaccination, if successful, results in a typical take. A re-vaccination, if successful, shows one of four reactions which can be classified according to the time when the lesion reaches the height of its development. The possible reactions are (a) A typical "take" as in a primary vaccination. (b) An immediate reaction. (c) An accelerated reaction. (d) A combination of (b) with either (a) or (c).

Typical "Take"—A typical 'take' is the only type of reaction which results from a primary vaccination. It may, however, occur after re-vaccination in individuals who have lost their immunity. The examination of the vaccinated area within forty-eight hours shows no evidence of a reaction beyond that seen on the control scratch or puncture. On the third

day slight redness can usually be seen at the vaccination site. On the fourth day a small papule is evident and the redness is more definite. On the fifth day, or occasionally earlier, the papule has changed to a small shallow vesicle surrounded by a narrow but clearly defined red zone, the primary areola. During the following days the vesicle increases in size, the contents become more turbid and a central depression, which appeared early, shows commencing crust formation. Between the eighth and the twelfth days, a second zone of redness appears outside the primary areola and remains in evidence for some part of a day. Though larger, it is much less clearly defined than the primary areola. This zone, spoken of as the secondary areola, marks the height of the reaction. Practically coinciding with the development of this secondary areola, a general reaction frequently occurs in adults and older children, as shown by fever, malaise and headache. The axillary glands are palpable and tender. (During this time the patient should be in bed.) The absence of any general reaction in infants is a very strong point in favour of infant vaccination. Following the fading of the secondary areola, the lesion rapidly retrogresses, being covered with a dry crust. In about two weeks' time the crust falls off leaving a depressed scar. If a typical "take" does not occur the correct procedure is to repeat the vaccination with fresh virus, and, if this fails, to repeat the vaccination a third or even a fourth time. Complete natural immunity is very rare. For cases which prove repeatedly resistant to vaccination, as performed either by the scratch or puncture method, intradermal vaccination may be used. In this method, the contents of one capillary tube of vaccine virus are expelled into the barrel of a 1 c.c. syringe. The plunger is inserted and 0.5 c.c. of sterile saline is drawn into the syringe. The vaccine material is thoroughly mixed with the saline by shaking and an injection of 0.1 c.c. is then made intradermally. The reaction which follows is a typical "take" and the resultant scar is about 1/4 of an inch in diameter.

Immediate Reaction—The immediate reaction is seen only in persons previously successfully vaccinated or in those who have had smallpox. It is characterized by the formation within

twenty-four hours of the time of vaccinating of a definite red papule accompanied by itching. This reaction reaches its full development within seventy-two hours and rapidly retrogresses. It never develops into a vesicle but quickly resolves from the papule stage. Comparison of the vaccinated site with the control scratch or puncture is essential in interpreting this reaction. The reaction is generally larger and more definite when re-vaccination is performed by the puncture method than by the scratch method. It is usually interpreted to mean that the individual has a satisfactory immunity to smallpox, but too great reliance must not be placed on this interpretation. It has been found that occasionally a person may give an immediate reaction which is later followed by the development of a vesicle, indicating that the individual did not possess as high a degree of immunity as would be interpreted from an early reading of the reaction. A more important point in this connection is the fact that dead or inert virus can elicit immediate reactions in persons previously vaccinated or in those who have had smallpox. In this lies a danger that immediate reactions, elicited by virus inert or incapable of producing a typical "take," may be interpreted to mean that the individual is immune to smallpox, thus giving a false sense of security. If potent virus had been used in these persons, reactions approaching a typical "take" might have been obtained.

The Accelerated Reaction—The accelerated reaction is seen in individuals who have lost some of the immunity induced by a previous successful vaccination or by an attack of smallpox. Beginning before the fourth day, this reaction progresses further than the papule of the immediate reaction and may pass through the vesicle, pustule and crust stages, occasionally resulting in a small scar. It reaches its height after the third day, but before the tenth day. It may vary, therefore, in its character and the time of development, from a reaction closely resembling an immediate reaction, to one closely resembling a typical "take." Its progress through all the stages however, is rapid and the lesion seldom reaches the size of a typical "take." In many instances the lesion of an accelerated reaction is dying before a typical "take" would have reached its height. This

reaction is seen, as stated, in individuals who have been previously successfully vaccinated or have suffered an attack of smallpox and who, through the lapse of time, have lost a part of their immunity. It indicates, therefore, a lessened immunity.

Although the more or less arbitrary time limits given here cannot be applied exactly to every case, there is little difficulty in placing observed reactions in one of these classes. As the immediate reaction may reach its height before the third day, it is necessary that observation of a re-vaccination should be made about the second or third day. A second observation of the site should be made about the sixth day when the presence of an accelerated reaction or a typical take may be recognized. The absence of any reaction following a re-vaccination requires that the procedure be repeated with known potent vaccine. The vast majority of "no reactions" following re-vaccination, however, are due to lack of observation at the proper time, rather than to the lack of the occurrence of reaction.

COMPLICATIONS

Complications are of rare occurrence if the modern methods of vaccinating are employed and the vaccinated area is kept clean and dry, shields and other unnecessary coverings being avoided. Armstrong, in a study of experimentally induced infection of vaccinations in monkeys, has shown conclusively that shields and other coverings produced conditions favouring secondary infection, and that, when tetanus spores were added to the vaccine used, tetanus developed only in the monkeys which had the vaccinated areas covered. To our knowledge, no authenticated case of tetanus following vaccination has ever been reported in Canada. Other complications, such as impetigo, the transfer of vaccine to other parts of the body, cellulitis and erysipelas, are of rare occurrence, as shown by the extensive experience during recent years of many public health officers in Canada. Encephalitis following vaccination has been described in other countries, but in spite of extensive investigation, the claim that the vaccine was the cause has not been substantiated.

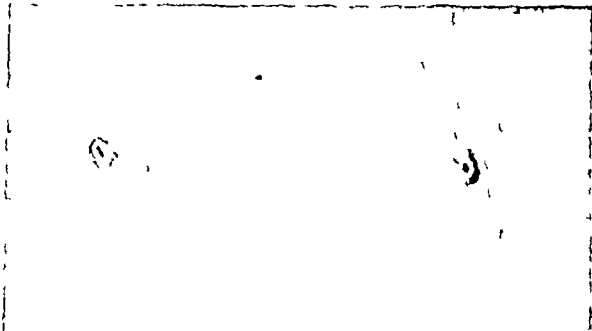
HOW TO KEEP VACCINE VIRUS

Vaccine virus must be kept in a well-iced refrigerator. Studies have shown that even at the temperature of a "cold" cellar or in a "cool" window vaccine virus rapidly loses its potency. Failures in vaccination and the necessity for repeating the procedure are for the most part due to weak or inert vaccine. As the vaccine is carefully tested and is known to be of satisfactory potency when it is sent out from the laboratory, it follows that the loss of potency must be caused by exposure to heat either in transit, in the drug store, or in the physician's office. To protect the vaccine when it is sent in quantity, special refrigerator boxes, which are kept filled with ice by the express companies, are used for shipping. A few packages, however, sent to a physician cannot be so protected in the mails and in consequence the vaccine may be rendered completely inert by contact of the mail bag with steam pipes or other sources of heat in the winter or by exposure to the heat of summer. A potent vaccine should give successful results in at least 90 per cent of primary vaccinations. The obtaining of a smaller percentage of "takes" in primary vaccinations should be sufficient warning to the physician that the vaccine was not fully potent, and it should be appreciated that the failure to "take" was not due to any natural immunity, but to weakness of the vaccine. In this connection it should be remembered that even "dead" virus may elicit immediate reactions in re-vaccination where typical "takes" or accelerated reactions might occur if the virus were fully potent. The use of weak virus may, as stated, give rise to serious error in the interpretation of the immunity status of individuals. If the vaccine cannot be kept in a well-iced refrigerator, it is desirable that fresh supplies be obtained as required from time to time for immediate needs only, rather than that vaccine be used which has been kept for even a few weeks under less favorable conditions.

VACCINATION CERTIFICATE

A vaccination certificate to be of any value should state the day on which the vaccination was performed, the day on which the vaccination was observed, and the character of the reaction, whether a primary "take", an immediate reaction or an accelerated reaction. A less complete statement leaves room for serious error. The

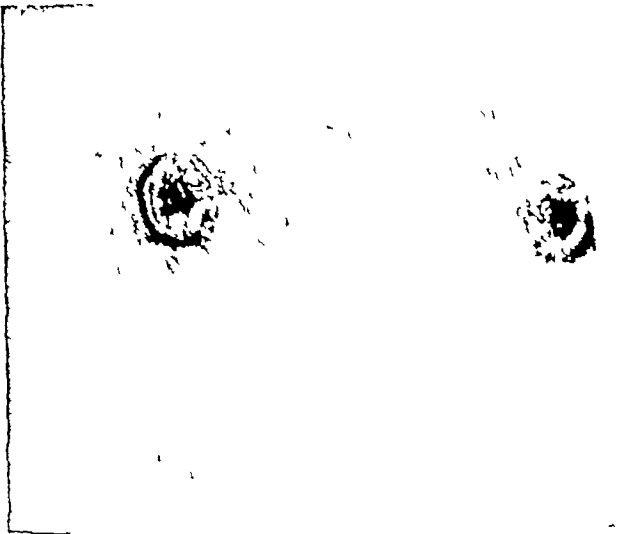
PLATE I—TYPICAL "TAKE"



4 Days



8 Days

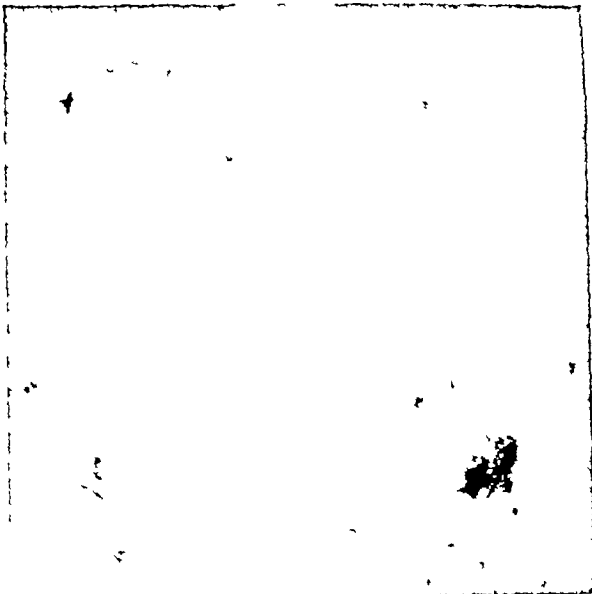


10 Days



2 Months

PLATE II—IMMEDIATE REACTION

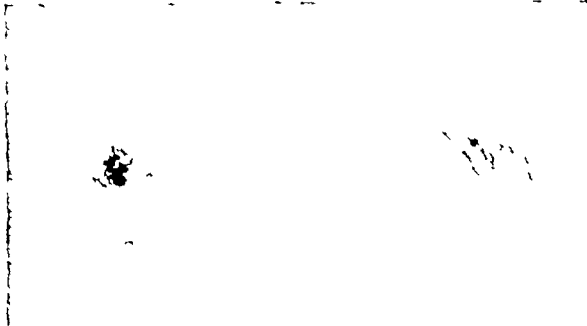


48 Hours

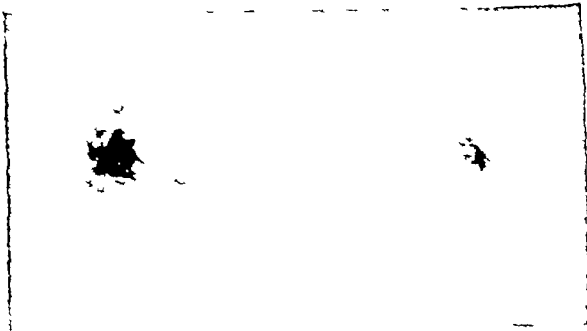
PLATE III—ACCELERATED REACTION



4 Days



5 Days



8 Days

VACCINATION CERTIFICATE

Date

This is to certify that I have vaccinated the bearer

on
DateTypical take
Immediate reaction was observed on
Accelerated reaction

Date

Signature of Person

Signature of Physician

Address

certificate should bear the signature of the person vaccinated in order that quarantine officers or other persons interested may have some means of proving that the bearer of the certificate is the person to whom the certificate was originally issued. Comparison of the bearer's signature with that on the certificate is used for this purpose. A copy of a suitable certificate is given herewith.

CONCLUSIONS

- 1 Modern methods of preparation of vaccine virus assure a product of high potency and freedom from all pathogenic organisms
- 2 Modern methods of vaccination eliminate severe reactions and large scars
- 3 The short scratch method, the puncture method, or a combination of these is advocated
- 4 Shields or other unnecessary coverings are a source of danger
- 5 Primary vaccination should be observed about the seventh day. Re-vaccination should be observed about the second or third day, and again about the fifth or sixth day
- 6 Temperatures higher than that of a refrigerator are destructive to vaccine virus, and the use of virus not kept in an ice-box may lead to error
- 7 A vaccination certificate should state specifically the type of reaction observed

DESCRIPTION OF PLATES (See page 532)

In these plates the vaccinations shown have been performed by the short scratch method and by the single puncture method for the purposes of comparison of the resultant lesions. In each instance the short scratch vaccination appears on the left of the picture and the single puncture vaccination on the right hand side.

PLATE I shows photographs of approximately actual size of a typical "take" in an adult. On the fourth day the small though definite vesicle is to be noticed. By the eighth day the vesicle has increased, surrounded by a definite primary areola. In the centre of the vesicle a crust has formed. The picture of the tenth day shows the reaction at its height. The indefinite, large secondary areola is well shown. The picture taken two months after vaccination shows the actual size of the final scar. Little difference is noted in the development of the lesions produced by the two methods of vaccination employed.

PLATE II shows the actual size of an immediate reaction in an adult with a history of a previous successful vaccination and re-vaccination. The reaction following the puncture vaccination (right hand side) is somewhat larger and more definite than that produced by the short scratch vaccination, illustrating the observation made in the text. The control scratch and puncture can just be seen about an inch above and corresponding to the reactions. The contrast between the reactions and the control is readily seen.

PLATE III shows an accelerated reaction. On the fourth day the puncture lesion is slightly more in evidence than the scratch lesion. By the fifth day more reaction has occurred on the scratch vaccination and there is evidence of some vesicle formation. The eighth day shows both lesions larger but already drying, in contrast to the growing vesicle of the primary "take" on the same day.

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PERIARTERITIS NODOSA*

WITH THE REPORT OF A CASE

BY G. F. STRONG, M.D.,

Vancouver

AT the present time periarteritis nodosa is one of the clinical rarities of medicine. First mentioned by Rokitsansky in 1852, the name and first accurate description of this disorder were given by Kussmaul and Maier in 1866. Since that time there has been a slow accumulation of authentic cases. In the first forty-two years, to 1908, only twenty-six instances of this peculiar disease were reported,¹ whereas in the last twenty years one hundred and sixteen cases, including the present report, have appeared. This increasing incidence may indicate a greater interest in the disease and a more careful study of autopsy material rather than any actual increase in the incidence of periarteritis nodosa.

Of the total one hundred and forty-two cases only twenty-one have been reported in English, six from England, one from Australia, thirteen from the United States, and this one from Canada, most of the others occurring in Germany and Central Europe. Whether this greater incidence in that part of Europe is due to any racial or geographical factor, or whether it is due to an increased interest in the study of this peculiar arterial disorder it is impossible to say. The larger percentage of autopsies obtained in some of the continental clinics may influence the finding of this disease which, in nearly every case, is diagnosed only post mortem and frequently only after examination of the microscopical sections.

CASE REPORT

Mrs. B., housewife, aged forty-six years, was seen on March 29, 1928, complaining of recurring attacks of severe abdominal pain accompanied by nausea and vomiting, progressive loss of weight and strength, pain and weakness in left forearm and hand, and pruritus.

Present illness—In the late summer of 1926 patient had influenza and from that time had never been well. She had felt run down and complained of occasional asthmatic attacks. In July, 1927, the patient was advised to leave Ontario and come to Vancouver for her health. It was about this time that the

present symptoms were first noted, and they have persisted with gradually increasing severity. She had consulted numerous doctors without relief, the diagnosis being usually neurasthenia. Because of the persisting abdominal pain attention was directed chiefly to the gastrointestinal tract and gall bladder, repeated x-ray examinations of which were negative.

In March, 1928, the patient consulted a gynecologist, Dr. J. J. Mason, who, in the course of his examination, had the blood examined. The count showed red blood cells 5,000,000, haemoglobin 80 per cent, white blood cells 32,000, polymorphonuclears 19 per cent, lymphocytes 10 per cent, monocytes 1 per cent, eosinophiles 70 per cent. The blood Wassermann was negative. Because of this unusual white cell count the patient was then referred to me for further study.

Past history—The patient was born in Ontario where she had always lived until coming to British Columbia. No significant previous illnesses. Tonsillectomy in 1926. Married three years, no pregnancies, catamenia regular.

Family history—Nothing relevant.

Physical examination (March 29, 1928)—The patient was acutely ill and showed obvious signs of loss of weight and strength. She was pale, with definite puffiness of the eyelids. There were numerous scratch marks on her skin and pruritus was a troublesome symptom. On the outer aspect of the lower third of her left leg was an irregular purpuric area several inches in diameter, undoubtedly aggravated by scratching. On both forearms, but more noticeable on the right, were a few small pea-sized non-tender subcutaneous nodules. Examination of her mouth, teeth and throat was negative. There were no enlarged lymph nodes. The thyroid was not enlarged. The pulse was 108, small and regular. The peripheral vessels, temporal, brachial and radial, all showed palpable sclerosis with beading and increased tortuosity. Blood pressure was systolic 160, diastolic 100. Temperature, 99°. The heart and lungs were normal. The abdomen was slightly distended, no rigidity, no free fluid. The liver was enlarged, extending from the fourth rib to three to four fingers' breadth below the costal margin in the mid-clavicular line, not tender. The spleen was not palpable and the area of splenic dullness not increased. Pelvis normal. Nervous system—the pupils reacted well to light and accommodation, no involvement of the cranial nerves, reflexes were normal, and there was no disturbance of sensation. There was slight weakness of the grip on the left side, with slight atrophy of the small muscles of that hand.

Diagnosis—The tentative diagnosis at this time was trichinosis or intestinal parasites. The diagnosis of parasitic infestation was based largely on the eosinophilia, and the subcutaneous nodules suggested trichinosis. The patient was sent to the Vancouver General Hospital for further examination.

First admission, (March 30, 1928, to April 14, 1928)—The temperature varied from 97° to 100.8°, and the pulse from 90 to 130, usually above 100. Respirations were normal. Patient complained of severe abdominal pains coming on in attacks at irregular intervals and associated with nausea and vomiting. These pains were so severe as to require morphine (grain ¼

* Presented at a meeting of the North Pacific Society of Internal Medicine, Vancouver, September 8, 1928.

hypodermically) for relief. Patient also complained of extreme general weakness, indefinite muscle pains, and pain and numbness in left hand and forearm. The abdominal symptoms had disappeared by April 6th, and the patient then began to feel better and was able to be up about the ward April 10th and to go home on the 14th. The purpuric area on the left leg had disappeared. Examination of eye grounds showed slight blurring of both discs and some peri papillary oedema. The arteries were definitely sclerotic, showing irregularity of the lumen, increased tortuosity, and increased refractility. The veins appeared normal. There were no hemorrhages and no exudate. On April 5th one of the small subcutaneous nodules was excised from the dorsal side of the right forearm near the elbow, and was found to consist of a grayish white homogeneous mass 2 mm in diameter. It was examined microscopically for trichina but there was no evidence of this parasite. The nodule was found to consist of a fibrosis surrounding a

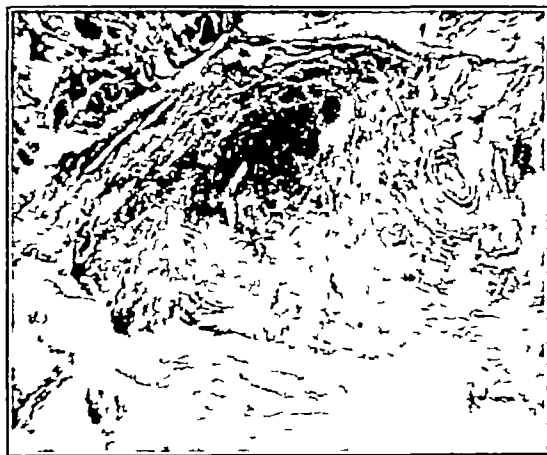


FIG 1—Subcutaneous nodule excised on April 5th. Note the marked fibrosis surrounding the small vessel in the centre of the nodule.

moderately large vessel, (Fig 1). No eosinophiles were noted in the surrounding infiltration. The right forearm was x-rayed because one nodule was attached to the ulna, but the result was negative. X-ray examination of the chest showed the heart and lungs to be normal, though the right diaphragm was elevated (enlarged liver). Repeated examinations of the stools for parasites were negative. For the blood count see Table I. Urinalysis was normal.

Second admission, (April 24 to 26, 1928)—Temperature, 98° to 98.6°, pulse, 90 to 120, respirations, 20. The patient re-entered hospital for further study. Her symptoms were increasing weakness, recurring abdominal distress, and increasing pain and weakness of both hands, more especially the left. The physical examination was similar to that on March 29th. The examination of the stools was again negative for parasites. For the blood count see Table I. While no definite diagnosis was attempted at this time, the following possibilities were considered: parasitic disease, in spite of negative stool examinations, and the absence of signs of trichina in the excised nodule; leukemia, because of the obviously progressive character of her illness, the extreme weakness and the unusual leucocyte count, and intra-abdominal disease because of the persisting abdominal symptoms.

Third admission, (May 15 to 26, 1928)—The patient was complaining of asthmatic attacks, debility, increasing weakness of both arms and hands, and recurring attacks of abdominal pain. Temperature was 97° to 105° (terminal pneumonia), pulse, 100 to 140, respirations, 20 to 30. The presence of an indefinite mass in the right abdomen (in addition to the enlarged liver), and the persistence of the abdominal pain, seemed to warrant further investigation. A barium enema showed a normal colon. Blood Wassermann again negative. Non-protein nitrogen, 36 mg. Urine, acid, specific gravity 1019, albumen a trace, sugar negative, red blood cells and hyaline casts present. For the blood count see Table I. The trace of albumen and red blood cells in the urine, the recurring abdominal pain, and the indefinite mass in the right upper quadrant suggested the possibility of right kidney involvement. Cystoscopy and pyelography on May 21st revealed normal

TABLE I

Date 1928	Red Blood Cells in Millions	Hemoglobin Per Cent	Colour Index	Staining	White Blood Cells	Polymorphonuclears	Lymphocytes	Monocytes	Eosinophiles	Number of cells Counted	Remarks
March 15	5.0	80	0.8	good	32,000	19	10	1	70	200	
March 31					31,200	11	9	1	79	200	Severe abdominal pain and vomiting
April 9					18,600	41	11	4	44	200	Remission
April 24					32,000	17	7		76	150	Recurrence of abdominal pain and vomiting
May 16	4.5	90	1.0	Irreg	21,000	58	5	3	34	100	Increasing evidence of peripheral neuritis. Progressive weakness
May 23					16,000	71	19	3	7	200	Acute pleurisy and pneumonia at the right base

kidneys and ureters, though the bladder was trabeculated. On May 24th the patient took a sudden chill and complained of severe pain in right lower chest. On May 25th there was evidence of right sided pneumonia and pleurisy at the right base. Death occurred on May 26th from pneumonia.

AUTOPSY

The autopsy was performed by Dr. H. H. Pitts, pathologist to the Vancouver General Hospital, nine and one half hours post mortem, and his report follows:

The body was that of a fairly well developed, poorly nourished, white female, forty six years of age. Relatively little of note was apparent on external examination. The small subcutaneous nodules noted during life were still palpable on both forearms.

The right pleural cavity was partly filled with sero-fibrinous exudate which also covered the lung. The lung was compressed and practically the entire middle lobe was involved in a pneumonic process. The lung weighed 740 gm. The left lung was free in the pleural cavity, weighed 500 gm. and on section showed scattered bronchopneumonic areas. The pericardial sac was intact. The heart weighed 270 gm. The valves, coronaries, and aorta were all intact. No gross evidence of arteriosclerosis and no beading of the coronaries. The musculature was pale and rather friable. Mediastinal glands were hyperplastic and congested.

The examination of the abdominal cavity revealed a liver of about normal size, but of a rather flattened, elongated type, a definite Reidel's lobe projecting downwards almost to caecum. The liver weighed 1,390 gm. and on section presented a typical nutmeg appearance. No gross fibrosis was present. The gall bladder was intact and not particularly enlarged. The stomach was moderately distended but it and the duodenum were intact. The jejunum was intact, but in the lower three feet of the ileum three rather elongated superficial ulcerations were found, with little loss of tissue but some necrosis of the mucosa, no induration and considerable surrounding congestion. They appeared to be in the Peyer's patches. The large intestine was intact. The spleen weighed 125 gm. and showed little of note on section. The uterus, tubes, and ovaries were intact except for two filbert sized intramural fibroids in the first. The kidneys each weighed 165 gm. The capsules stripped fairly easily, except in one or two areas, leaving a peculiar mottled appearance, with grayish white to yellow surface, and depressions of a more normal tissue running between elevated, more grayish white, areas. On section, the cortex was seen to be of normal thickness, with the same rather mottled appearance presenting and with scattered small cortical abscesses. The pelvis seemed intact. The ureteral mucosa was slightly reddened and the bladder mucosa trabeculated and pale, except at the ureteral orifices where some congestion was apparent. The bone marrow removed from one femur showed a reddish yellow, fairly normal gross appearance.

In none of the vessels, namely the mesenteric, splenic or renal arteries, were there any evidences of aneurysmal dilatations nor of any particular gross thickening of the vessel walls.

Diagnosis: right lobar pneumonia and acute fibrinous pleurisy, left broncho pneumonia, ulcerative enteritis (ileum), chronic degenerative nephritis, multiple abscesses of the kidneys, myocardial degeneration.

Microscopical findings: Heart sections through the heart muscle showed the muscle fibres to be somewhat swollen, fairly closely packed, the cross and longitudinal striations rather poorly defined, nuclei only fairly distinct, myocardial degeneration. The branches of the coronary artery showed considerable increase in the thickness of the walls, this increase being largely a fibrous replacement of the media and adventitia (Fig. 2).

Sections through the right middle lobe and pneumonic areas in the left lung showed all the alveoli to be



FIG. 2—Branch of a coronary artery showing the great increase in the thickness of the walls, this increase being due to a fibrous tissue replacement.

completely filled with a cellular fibrinous exudate rich in polymorphonuclears, the blood vessels throughout being completely engorged and the alveoli airless, lobar and bronchial pneumonia. (No larger arteries were included in these sections.)

A number of sections were taken through the kidneys some to include the small abscess-like formations. These were seen to show complete degeneration of the tubular structure in the involved areas, the lining epithelium being completely fashioned into an amorphous mass, the glomeruli being similarly involved, while vast numbers of inflammatory cells were seen infiltrated throughout. These areas were surrounded by a deep zone of congestion. The sections through the elevated whitish areas in the kidneys showed large collections of small round cells with areas of fibrosis apparently conforming to these demarcations. This small round cell infiltration extended from these areas in a more diffuse but less abundant fashion throughout the whole kidney substance. The glomeruli themselves did not appear much involved, while throughout there was quite extensive congestion, the lining epithelium of the convoluted tubules being desquamated in many areas and, where present, appearing to be of a much lower type than normal. The fairly large branches of renal artery which were present in the sections of the kidneys showed considerable increase in the thickness of the walls, this increase being largely a fibrous replacement of the media and adventitia (Fig. 3). Chronic degenerative nephritis.



FIG. 3—Branch of renal artery showing increased thickness of wall due to connective tissue formation.

Sections through the liver showed an advanced stage of passive venous congestion, the central veins being deeply congested and the liver cells immediately surrounding and for a considerable distance around showing definitely atrophic changes, the whole having a very marked mottled appearance.

Several sections were taken through the ulcerated areas in the ileum but these only showed necrosis of the mucosa and, to some extent, the submucosa. Relatively little inflammatory cell infiltration was present, but well defined congestion of the vessels throughout. There were a number of fairly large submucosal vessels embodied in these sections which showed a condition of end arteritis rather than periarteritis, it would seem as if there was almost complete occlusion of the lumen by organizing fibrous connective tissue structure.

Sections through the spleen showed a moderate degree of passive venous congestion, but otherwise little of note beyond hypoplasia of the Malpighian corpuscles. The mediastinal glands also showed a very marked congestion, but otherwise there was little of note.

A number of sections were taken through the bone marrow and stained by various methods, but in none of these was there anything of particular note, certainly no evidence of increased eosinophile formation and no particularly abnormal cells. Several vessels present in these sections showed, as seen in other structures, definite thickening of the media and adventitia.

In an effort to establish a diagnosis in this case these sections were examined more particularly as regards the vascular channels and it was found in all that the larger vessels showed definite thickening of their walls (especially in the adventitia), many of these being increased approximately three or four times their normal thickness. This process held good only in the larger vessels, for instance, the small vessels forming the centre of the Malpighian corpuscles in the spleen showed no evidence of this fibrosis. There was only slight evidence of inflammatory cell infiltration within this fibrous connective tissue formation or surrounding it. No eosinophiles were noted in the cellular exudate.

Sections were taken from the various organs and stained with a variety of stains, i.e., van Gieson's Mallory's aniline blue, Unna's elastic tissue stain, and the two former showed well defined connective tissue increase in the walls, this connective tissue formation being in both media and adventitia, but most marked in the latter. With the elastic tissue stain the elastic laminae were clearly defined and showed evidence of rupture, especially clear in those vessels with the greatest increase in connective tissue formation (Fig. 4).

This was apparently a case of periarteritis nodosa.



FIG. 4.—Smaller branch of renal artery stained with elastic tissue stain. This shows the elastic laminae. In this case the intima is definitely deficient in part.

The gross findings did not conform to those found in many other reported cases but the microscopic examination of the blood vessels seemed to point undoubtedly to a lesion of this type.

The splendid review of the subject of periarteritis nodosa published by Gruber in 1926² furnishes a summary of the authentic cases to that date. Twenty-four additional cases have been reported since that time. A tabulation of all cases of periarteritis nodosa to the present time follows—

TABLE II

Author	Date of Report	No of Cases
Gruber ²	1926	118
*Cleland ³	1923	1
Christeller ⁴	1926	4
Frommels ⁵	1926	1
Franz ⁶	1926	5
Gray ⁷	1926	1
Harbitz ⁸	1927	1
Singer ⁹	1927	2
Marinresco and Draganescio ¹⁰	1927	1
Battaglia ¹¹	1927	2
Bancroft ¹²	1927	2
Giese ¹³	1927	1
Basch ¹⁴	1927	1
†Freund ¹⁵	1927	1
Strong (present report)	1928	1
Total		142

Gruber's above mentioned review has made available in German a summary of the clinical and pathological findings. It may be of some value so to summarize the cases reported in English that further interest in this unusual disease may be stimulated on this continent. A brief resumé of each of these is therefore presented, together with a table of certain data of interest and value in the study of periarteritis nodosa.

SUMMARY OF CASES REPORTED IN ENGLISH

DICKSON¹⁶ Messenger boy, fourteen years old. Initial complaints, cerebral symptoms. Febrile illness, convulsions. Diagnosis, tuberculous or pneumococcal meningitis. Duration of illness, fifteen weeks.

LONGSCOFF¹ Coloured stevedore, aged thirty-five. Initial complaints, cardiac and arthritic. Widal repeatedly negative. Duration, eight weeks. Sudden death.

COOKE¹⁷ Boy, aged nineteen. Initial complaints, pain in the calves of legs while standing or walking. Febrile illness. Duration, eleven weeks. Sudden death.

LEWIS¹⁸ Plumber, aged thirty-three. Initial complaint, numbness and soreness of the hands. Febrile illness with irregular muscular pains. Loss of reflexes. Duration, ten weeks.

BEATTIE AND DOUGLAS¹⁹ Cutler, nineteen years old. Diagnosis at first influenza, later typhoid fever. Duration, eight weeks.

* This case appears to have been overlooked by Gruber, yet it seems to be an authentic example of periarteritis nodosa.

† This case has not been verified.

LAMB ²⁰ Mechanic, aged twenty six Initial complaints, asthma, and an itchy, painful swelling about right ankle Purpuric eruption all parts of the body except face Severe abdominal cramps, joint pains Diagnosis, purpura rheumatica Duration, eleven weeks Eosinophiles up to 51 per cent

LAMB ²⁰ Girl, aged ten Initial complaints, epigastric pain and vomiting, sore throat Diagnosis, at first appendicitis Appendectomy Later, acute tonsillitis, acute nephritis, acute arthritis Duration, nine weeks Sudden death

KLOTZ ²¹ Woman, music teacher, aged thirty three Initial complaints, abdominal pain, pain in muscles and joints, tenderness over gall bladder Diagnosis, at first cholecystitis, possibly empyema of gall bladder, later, *streptococcus viridans* infection Duration, four weeks Sudden death resulted from rupture of a periarteritic nodule in the right lobe of the liver

KLOTZ ²¹ Man, aged fifty three, mail carrier Initial complaints, general weakness and nocturia Tonsillitis, purpuric nodules on legs and chest Diagnosis of Wilson's disease (degeneration of the lenticular nucleus) Blood Wassermann ++++ Duration, eighteen months Death resulted from hemorrhage into the peritoneum

CAMERON AND LAIDLAW ²² Newspaper cyclist, aged twenty seven Initial complaints, severe abdominal pain, extreme weakness and loss of weight Thickening of peripheral arteries Periarteritic nodules Febrile illness Diagnosis, at first tuberculosis of vertebrae, later arteriosclerosis, later malignant gastric disease Duration five months ? lues

MANGES AND BAEHR ²³ Man, aged thirty nine Complaints, recurring abdominal pain Exploratory laparotomy Periarteritic nodules in the mesentery Microscopic examination of excised nodule revealed typical acute changes Died four months after operation as a result of nephritis, with a terminal broncho-pneumonia. Duration, six months

HARRIS AND FRIEDRICH ²⁴ Coloured labourer, aged thirty two Initial complaints, weakness and abdominal pain Later, pain in the region of right kidney "Surgical abdomen" Duration, five and a half weeks

CARLING AND HICKS ²⁵ Engineer, aged thirty Initial complaints, severe pain and tender swelling in right calf Provisional diagnosis, gummatous infiltration, possibly sarcoma Exploratory incision showed "scattered nodules of a fibrotic nature about the smaller arteries" Microscopic examination of nodule showed typical periarteritic changes Nodules also developed on both arms Blood Wassermann ++++ Patient given intravenous injections of "salvarsan substitute" with apparent cure Duration nine months.

OPHULS ²⁶ Persian, janitor, aged thirty eight Complaints, abdominal symptoms for which an appendectomy had been performed, asthma, ascites, hydrothorax "Findings and the course of the disease were so unusual that the clinicians refused to make a diagnosis" Duration, eight months Death from myocardial weakness

WORDLEY ²⁷ Boy, aged thirteen A case of cortical necrosis of the kidney Hematuria, "fits," suppression of urine The only visible macroscopic periarteritic nodules noted were in the coronary vessels The kidneys showed microscopic evidence of typical changes of periarteritis nodosa Duration, two months

CLELAND ³ Man, aged eighteen years Mechanic Initial complaints, headache, abdominal pain Febrile course with rapid emaciation Evidence of involvement of the central nervous system. Diagnosis, typhoid fever, military tuberculosis Duration, nine weeks

KEEGAN ²⁸ Woman, drug addict, aged twenty four, with persistent abdominal symptoms and pus cells in the urine Exploratory laparotomy revealed no disease of the abdominal viscera Right kidney was then explored and removed Cross section showed numerous white milky nodules, microscopic examination of which showed periarteritic changes Patient died two months after

the operation as a result of cardiac insufficiency and pericarditis Duration three months

GRAY ⁷ School boy, aged twelve Injury to left knee, resulting infection of left thigh Febrile illness, with negative blood cultures Local inflammation subsided at the end of a month, but patient's condition steadily deteriorated Died from hemorrhage from a periarteritic aneurysm of the cystic artery Duration, nine weeks

SINGER ⁹ Coloured man, aged twenty nine Hypertension Diagnosis, catarrhal jaundice and a diffuse syphilitic hepatitis, in addition to chronic nephritis Cholecystectomy Two and a half months later patient was readmitted to hospital with evidence of myocardial insufficiency which resulted in his death Arteries of the excised gall bladder showed changes suggestive of periarteritis No autopsy was performed

SINGER ⁹ Man, aged fifty seven, with symptoms of decompensation Hypertension Diagnosis, chronic nephritis, with myocardial insufficiency Fe admission abdominal pain, definite signs of polyneuritis Diagnosis, morbus incognitus Autopsy revealed striking changes in the arteries of the walls of the gall bladder, in addition to changes in the vessels of the heart and kidney, typical of periarteritis nodosa

GENERAL ANALYSIS

A statement of the prominent features of these twenty-one cases is presented in Table III The paucity of clinical notes in some of these cases is an unfortunate result of the impossibility of making a diagnosis before autopsy There are certain points in this table which should be emphasized The temperature is practically always elevated, in only one of the twenty-one cases was it reported as normal Leucocytosis nearly always occurs, in only one of the cases in which the white blood cells were counted were they found to be normal The differential count usually reveals an increase in the polymorphonuclears, though in three cases, including the present one, an eosinophilia occurred Urinalysis reveals the frequent occurrence of albumen in small amounts and the presence of hyaline and granular casts Abdominal pain was the most prominent clinical symptom, occurring in fifteen of the twenty-one cases The liver was frequently enlarged, whereas the spleen was only found to be increased in size in one instance Other symptoms were found less often Skin manifestations occurred in eleven cases, arthritis in six, peripheral neuritis in five sore throat in four and asthma in three

DISCUSSION

With the accumulation of these case reports there have grown up certain ideas regarding periarteritis nodosa which it may be well to discuss

Age—The disease may occur at any age, in

TABLE III

	Author	Year	Age	Sex	Duration	Pulse	Temperature	Blood Pressure	Red Blood Cells in Millions	Hemoglobin %	Blood Count				Urine	Abdominal Pain	Liver	Spleen	Peripheral Neuritis	Skin Manifestations	Asthma	Sore Throat	Arthritis	
											White Blood Cells	Polymer platelets	Lymphocytes	Monocytes										
1	Dickson	1908	14½	M	10W	85 98	96 101		Anæmia —		Normal				alb tr	+	0	0						
2	Longcope	1908	35	M	8W	56	96 101			88	13,200 30 000				alb tr hy gr casts		+	0					+	
3	Coke	1911	19	M	11W		98 102				16,800 17 700	80			alb tr hy gr casts					+				
4	Lewis	1911	33	M	10W		101			50	17 600								+					
5	Beathe and Douglas	1912	19	M	8W	82 118	100									+				+				
6	Lamb (1)	1914	26	M	11W	80 130	98.6 101.5°	145 105		42 75	20 900	32 58	11 17	0 5	51 23	alb — hy gr w b.c.e.r	+	0	—		+	+		+
7	Lamb (2)	1914	10	F	9W	74 120	99 103.2	104 60			33 100 39 800 40 400	93 90 73	9 27	1		alb tr hy gr casts	+	0	0		+		+	+
8	Klotz (1)	1917	33	F	4W		100 103				12 000	76				alb — gran. c w b c	+	0	0			0	+	+
9	Klotz (2)	1917	53	M	18M		100° 103		2.9 2.5		7 400 13 600 21 000					alb — casts		+	0		+		+	
10	Cameron and Laclaw	1918	27	M	5M		100									alb tr	+	+		+	+			
11	Manges and Baehr	1921	39	M	6M		102 103	160 90			36 000 54 000 20 000	75 90				normal	+	+	0		+		+	
12	Harris and Friedrichs	1922	32	M	5½W	80 130	97* 103	140 80			10 000 16 600	71 80	25 15	3 4	1	Alb 0		+	0					
13	Carling and Hicks	1923	30	M	9M		99 101				18 000 30 000 14 000	71 86 67	24 6 21	4 8 9	1 0 3	normal				+	+			+
14	Ophuls	1923	38	M	8M	70 110	to 103°	103 80	4.0	70	6,300 11 500	normal			0	alb — hy gr casts	+	+	?		+	+		+
15	Wordley	1923	13	M	2M	100 101	100 101	106			16 000	82	14	2	2	alb — hy gr casts blood cells	+	0	0					
16	Cleland	1923	18	M	9W	90 140	97° 102				17 700 13 600 20 000	90				alb — hy gr casts	+		0		+		?	?
17	Keegan	1925	24	F	3M	120	103	125 90	4.2 3.5	60 60	20 000 40 000 29 600	90 82 84				alb tr casts + white blood cells	+	+	0					
18	Gray	1926	12	M	9W	136	102																	
19	Singer (1)	1927	29	M	5M	80 90	N 99.6	200 140	2.26 1.2 1.8		11 000				4	alb —	+	+						
20	Singer (2)	1927	57	M	6M	100	97*	245 130			11 400 21,300 44 000	83 93			2	alb — hy casts	+	+		+				
21	Strong	1928	46	F	11M	90 120	97* 100.8	160 100	5.0 4.5	90	32 000 16 000	17 71	7 19	3	76 7	alb tr hy casts	++	+	0	+	+	+	0	0

fact Gruber² records instances of periarteritis nodosa in a baby two and a half months old and in a man seventy-eight years old. Most cases occur, however, in the third and fourth decades, at the time of life when infections and infectious processes are most common.

Sex—The disease is more common in man. Gruber² states the sex in a series of one hundred and thirteen cases, eighty-seven of which were men and twenty-six women, and in this present tabulation of twenty-one cases, seventeen are men and four women. Periarteritis nodosa is therefore three to four times as common in men as in women.

ETIOLOGY

The cause of periarteritis nodosa is as yet unknown. Since the disease was first recognized various theories have been advanced, some of which deserve mention only to be excluded.

Syphilis—At one time syphilis was thought to be the cause of periarteritis nodosa as it has frequently been blamed for many another obscure disorder. The fact that there is a true syphilitic arteritis confused the issue for some time. However, in periarteritis nodosa the Wassermann reaction has usually been negative and histological examination of the arterial lesions stained by the Levaditi method has repeatedly failed to show any spirochaetes. It seems definitely established that syphilis plays no part in the production of the lesions of periarteritis nodosa. The fact that the disease has been found in animals, *i.e.*, the deer, calf, pig and dog² further excludes the possibility of syphilis as the cause.

Mechanical causes—The rather bizarre idea was at one time advanced that the multiple aneurysms found in cases of periarteritis nodosa were due to a rupture of the elastic membranes caused by increased intravascular pressure. Needless to say, careful study of the pathogenesis of the lesions of periarteritis nodosa readily disproved this idea.

Parasites—The theory that periarteritis nodosa might be due to parasitic disease gains strength from certain observations quoted by Cameron and Laidlaw²². There is a disease of horses characterized by multiple aneurysms along the mesenteric vessels which is known to be due to the parasite *Strongylus armatus* and certain aneurysms in dogs are caused by a

nematode worm *Spioerca sanguinolenta*. In the latter the mode of attack of the vessel, the resulting degeneration of the media, and the formation of aneurysms, is most suggestive. The presence of an eosinophilia favours parasitic disease. This blood finding, however, is not universal and it hardly seems possible that the causative parasite could have been overlooked in all the cases studied.

Streptococcus Septicæmia—A streptococcal septicæmia was at one time thought to be the cause. Numerous cultural studies that have been made, however, both on the blood and other body fluids before death, and on the blood and various tissues after death, refute the possibility of an acute streptococcal infection as the cause of periarteritis nodosa.

There remain three possibilities to be discussed in connection with the present view as to the etiology. These are (1) the filterable virus, (2) rheumatic infection, and (3) the idea that periarteritis nodosa is not due to any specific cause but is rather a reaction on the part of the vascular tissues to certain "toxic" or "infectious" factors.

Filterable Virus—Harris and Friedrichs²⁹ were able to produce in a rabbit typical changes of periarteritis nodosa from intravenous injection of a filtrate prepared from the organs of another rabbit that was killed two and a half months after inoculation with a suspension made from the nodules of a human case. In their opinion periarteritis nodosa is due to a specific causal agent, a filter passer. These results have not yet received verification from other studies. In fact, Otani³⁰ has challenged them, and Franz⁶ failed to reproduce the disease in guinea pigs. Even so, a filterable virus must still be considered as one of the possible causes.

Rheumatic Infection—While an acute streptococcal infection is not a likely cause of periarteritis nodosa, the less virulent type of streptococcus associated with rheumatic fever may be the offending organism^{21, 28}. The not unusual association with sore throat, the arthritis and muscle pains, some of the cutaneous manifestations, and the leucocyte count, all suggest an infection, and an infection of the rheumatic type. The pathogenesis of the lesions in periarteritis nodosa also is extremely suggestive of an infectious origin. The early cases show acute inflammatory changes, which later,

if time permits, develop a sclerosis as an attempt to heal the injury wrought by the acute manifestations. This process is well illustrated by the case of Manges and Baehr,²³ in which a periarteritic node removed at operation showed definite acute and subacute reactions, while the study of the autopsy material, obtained three and a half months later, showed none of these acute changes.

The third remaining view as to the etiology of periarteritis nodosa is that it is not a disease *suu generis*, but rather a reaction on the part of the organism to some unknown factor, the reaction being located in certain areas of the arterial system. This theory, while not at all new, is strengthened considerably by the fact that it has received the support of Gruber who has given the subject considerable attention. The changes in the arteries may be a non-specific response to a number of different agents, toxic or infectious as the case may be, or these reactions may be evidences of a hypersensitivity to some bacterial organism. The latter possibility is of interest in connection with the relation to rheumatic infection. As already pointed out there are certain points of resemblance between periarteritis nodosa and rheumatic fever, and further consideration should be given this possible relationship. A recent suggestion, by Swift and his co-workers,³¹ regarding the possibility that rheumatic fever itself is a hypersensitivity to a non-haemolytic streptococcus is of considerable interest. The present stage of our knowledge of periarteritis nodosa does not permit of conclusive views as to either the cause of the disease or the pathogenesis of the lesions. The possibility that periarteritis nodosa also may be a hypersensitivity is worth considerable thought. This hypersensitivity may be to a filterable virus or to a non-haemolytic streptococcus, or to any other as yet unknown organism.

PATHOLOGY

The pathology of periarteritis nodosa is not entirely established, for while it has received much more consideration than the clinical condition, there are still divergent views as to the pathogenesis of the described lesions. No attempt can be made in this paper to enter into any discussion of the pathology of periarteritis nodosa and the following views are in the nature

of a summary of what appear to be the most logical of the recent opinions.

Periarteritis nodosa presents an involvement of arteries of the size of the coronary and main branches of the renal artery, the larger vessels, the aorta and its main branches, usually escape and these smaller vessels bear the brunt of the attack. The most frequent location is in the principal divisions of the renal arteries.² The next most frequently involved are the coronary vessels, then in order the mesenteric vessels, the branches of the hepatic artery and cystic arteries, the arteries to the other viscera, the cranial arteries, and the peripheral arteries. The predominant involvement is, therefore, in the medium-sized arteries. Extension is seen into the branches of these arteries and may even extend to arteries of very small calibre. Venous involvement has been described^{2, 26} but is not usual.

The pathological changes may be divided into (1) the changes found in the vessels themselves, and (2) the changes occurring in the organs and tissues as a result of the disturbed circulation.

GROSS CHANGES

The involved arteries may show small aneurysms or nodular formation, or may only reveal a diffuse thickening without any nodular appearance. Nodosities, when they occur, may be very profuse, even to the extent of producing a resemblance to a string of beads. These nodules may, on the other hand, be widely scattered and only discovered after careful search. The cases of periarteritis nodosa in which no nodule formation can be seen and in which involvement is entirely diffuse are those in which a diagnosis can only be made after careful examination of the microscopic sections. Lamb²⁰ mentions this occurrence in five cases and points out that this fact may lead to the disease being overlooked both clinically and pathologically. That such is not often the case, however, is shown by the further fact mentioned by Lamb that in a review of all cases of nephritis occurring at the Presbyterian Hospital during a period of six years no case of periarteritis nodosa was found, although a careful search for the disease was made. The arterial involvement may be localized to any one organ, or any one part of the body, or it may be diffuse. Extravasation of blood from rupture of one of these small aneurysms or diseased vessels

may occur producing, for example, hæmorrhage into the peritoneal cavity, gall bladder, perirenal spaces, cranial cavity, and so forth.

The gross appearance of the heart is often strikingly characteristic. On opening the pericardium the coronary vessels stand out as thickened nodular cords. The kidney may present gross evidences of the disease, showing miliar nodules scattered throughout the substance, particularly visible on longitudinal section. Involvement of the intestinal tract may occur as a result of thrombosis of the mesenteric vessels, infarction or ulceration, particularly in the ileum. The liver in most cases is enlarged and on section presents fibrosis or passive congestion.

MICROSCOPICAL CHANGES

The microscopical appearance of an affected vessel depends upon the stage of the disease. Early there is an acute perivascular infiltration extending into the adventitia. This cellular infiltration is usually polymorphonuclear, though it may be round-celled or occasionally may consist of eosinophiles.^{25 26} The congestion resulting from this infiltration leads to an occlusion of the vasa vasorum, with a resulting necrosis of the media and a weakening of the elastic laminae. Necrosis in the media is followed by a hyaline connective-tissue replacement, which also occurs in the adventitia. The weakening of the elastic laminae results in rupture which frequently leads to the aneurysm formation so typical of the disease. At times the involvement of the vessel is focal, so that nodular formation may occur as a result of the increased thickening of the layers of the arterial wall but without true aneurysm formation. The intima is not usually involved though even this coat may not escape. Thrombosis is a frequent result, especially when aneurysm formation occurs, and may go on to complete occlusion of the vessel, producing an infarct, or at times evidence of recanalization can be found. The late stages of periarteritis nodosa present a striking fibrous tissue thickening of the arterial wall, particularly the media and adventitia, this fibrous tissue occurring in an irregular arrangement that produces a diffuse or nodular involvement of the artery. In these late stages the cellular infiltration has usually disappeared. The

spread of this inflammatory process is by way of the perivascular lymphatics.²¹

The microscopical changes produced in the viscera are those depending upon interference with the blood supply and are cloudy swelling, fatty degeneration, cortical necrosis or other evidences of cellular destruction. This results in the nephritis, myocardial degeneration, ulcerative enteritis, cerebral involvement, and so forth, that may develop in these cases and which may so dominate the picture, both clinically and pathologically, as to obscure the true diagnosis. The kidneys show the most marked changes, early involvement causing tubular degeneration often to the extent of fibrous tissue replacement. This process may go on without involvement of the glomeruli, though at times there is an extension of the inflammatory process into the kidney substance with widespread destruction of renal tissue. Involvement of the arteries of the heart leads to the usual picture of cardiac muscle degeneration. The liver is frequently the site of an extreme grade of passive congestion which may present the appearance of evanescent atrophy. The reason for this congestion is not entirely clear, since it is out of proportion to other evidences of myocardial weakness. At times there is a considerable fibrosis present in the liver substance. Infarcts may occur in any of these organs or in other involved areas.

Periarteritis nodosa is a vascular disease and it is only the arterial lesions that are typical. A fatal outcome in periarteritis nodosa may occur as a result of injury to the vessel itself as rupture or thrombosis or as a result of degeneration of an organ as a consequence of this arterial disease.

SYMPTOMS AND PHYSICAL SIGNS

As might be expected from the complex character of the pathological findings, the symptoms of periarteritis nodosa are many and varied. The onset of the disease may be acute or insidious, the acute onset being associated with the more fulminant type of case, whereas the insidious onset usually occurs in the chronic case. Abdominal pain is a very frequent symptom. The origin of this pain is not entirely clear, most writers being satisfied with the explanation that it is due to involvement of the mesenteric vessels. Weakness is another symptom prominent out of all proportion to

the severity of the physical signs of the disease. This weakness is such an outstanding feature that chlorotic marasmus is frequently mentioned, particularly in the earlier descriptions of periarteritis nodosa. Loss of weight is usually a noticeable feature, in the more acute forms of the disease this weight loss being the rapid emaciation of an acute illness, while in the chronic forms there is usually considerable gradual loss of weight accompanying the loss of strength. Most of the cases of periarteritis nodosa exhibit a temperature at some time in their course, though fever is not a constant symptom. In some instances the febrile course is distinctly septic, while in others the temperature is subfebrile.

The pulse is rapid, usually out of proportion to the degree of temperature, and this tachycardia has received much comment. The frequency of involvement of the coronary vessels would naturally lead one to anticipate a certain amount of myocardial insufficiency, which would account for this increased pulse rate. Dyspnoea also may be noted, although it is by no means the pronounced distress which characterizes a failing myocardium. Other evidences of decompensation, as œdema and cyanosis, are not common, though œdema may occur as a result of renal insufficiency.

Blood pressure in those cases in which it is recorded is frequently elevated. The urine usually shows a small amount of albumen, and very frequently hyaline and granular casts. These evidences of renal involvement are not surprising in view of the frequency with which the disease attacks the renal arteries.

In a number of cases sore throat has been noted at the onset of the disease. Pains in the muscles are a common feature. These pains may be so severe as at times to suggest an actual invasion of the muscle tissue, so that polymyositis is a common finding in the clinical picture. Arthritis has also been noted. In fact the occurrence of these three symptoms has given additional weight to the theory that periarteritis nodosa may be a manifestation of a rheumatic type of infection. The patients in some of the reported cases have suffered from asthma and the possibility of periarteritic involvement of the bronchial vessels makes this symptom a likely one in any case.

Peripheral neuritis occurs fairly frequently

Whether this neuritis is a result of decreased blood supply to the peripheral nerves because of periarteritic involvement of their nutrient vessels, or whether the neuritis is a toxic result of the disease itself is not entirely clear.

Various skin manifestations have been reported in this disease. In addition to the subcutaneous nodules which occur as a result of the involvement of the arteries in this area other skin lesions may present themselves. Urticaria and pruritus are commonly noted. Purpura occurs at times during the course of the disease, at other times it is a terminal feature.

The liver is usually enlarged, though the reason for this is not altogether clear. The moderate evidence of myocardial insufficiency would account for a certain degree of passive congestion which is frequently found in the liver, but would not explain the extreme degree of congestion which is out of all proportion to the other evidences of congestive heart failure. The spleen is seldom enlarged.

Leucocytosis is invariably present. This leucocytosis varies from 10,000 to 30,000 per cmm, or in some few cases even to 40,000 or higher. The differential count usually shows a preponderance of polymorphonuclears with, in some few cases, increased eosinophile counts. There is usually, though not invariably, an accompanying secondary anæmia.

When the cerebral arteries are involved symptoms due to the involvement of the central nervous system are prominent. Cranial nerve lesions may occur, and delirium, convulsions and varying degrees of coma may be noted.

Death may occur suddenly from rupture of an aneurysm producing a fatal hæmorrhage, or may be due to secondary degeneration of certain organs as a result of the arterial disease producing, for example, uræmia or myocardial failure.

DIAGNOSIS

The disease is a sub-acute, febrile, wasting illness, characterized particularly by abdominal pain, unusual leucocytosis, peripheral neuritis and myositis and evidence of nephritis. When subcutaneous periarteritic nodules occur (in 20 per cent of cases) the possibility of making a diagnosis is increased. The course of the disease is characterized by irregular exacerbations and remissions. The varied nature of the symptom

complex has naturally led to an extremely wide range of ante-mortem diagnoses, those most commonly noted are sepsis, typhoid fever "acute abdomen", trichinosis, nephritis, peripheral neuritis myositis, miliary tuberculosis, dysentery, purpura, meningitis, encephalitis, or any one or a wide variety of other conditions. The cardinal symptoms of periarteritis nodosa are gastrointestinal manifestations, chlorotic marasmus, peripheral neuritis and nephritis.

DURATION

The duration of periarteritis nodosa shows considerable variation from case to case, although the duration period reported must be accepted with reservations because of the frequent insidious onset and also because of the fact that clinical observation in these cases has often been most fragmentary, the diagnosis only being made after death. The duration reported varies from six days to two years. The average duration in fifty-eight of the cases reported by Gruber,² in which sufficient information is given to be accurate regarding this point, was 47 months.

PROGNOSIS

The prognosis in a disease almost always diagnosed after autopsy is apt to be very bad. Gruber in fifty-four cases, reviewed in his 1926 article, mentions four cures, two of which he queries, while in my twenty-one collected cases there was only one cure. It is generally believed that some mild cases may go on to recovery. The pathological evidence seems to show that there is a definite effort at repair and it is possible that the mortality in this condition may not be so high as the above mentioned figures would indicate. The fact that the changes of periarteritis nodosa are very rarely found at post-mortem examination, even where large numbers of autopsies are done, would indicate that it is a rare disease with a high mortality.

TREATMENT

Since the cause of the condition is unknown the treatment is entirely symptomatic. It is of interest to note that in the case reported by Carling and Hicks,²⁵ recovery occurred after the administration of an anti-syphilitic arsenical given intravenously. The exhibition of such a drug would seem to be indicated in cases where the diagnosis is established at a time when treatment might be of some value.

DISCUSSION OF SPECIAL FEATURES IN THIS CASE

The case here reported presents certain features which merit further consideration.

Absence of Anæmia — The absence of anæmia in this case was one of the factors which prevented a proper diagnosis being made before death. A cursory review of available text-book descriptions of the disease, at the time the subcutaneous nodule was excised, stressed secondary anæmia as a most prominent feature of the condition. In this case the red blood count was five millions at first and even shortly before death had only fallen to four million five hundred thousand. In spite of this high red count the patient presented a marked pallor, which point, with her weakness, might easily have been interpreted as the chlorotic marasmus of the earlier descriptions.

Unusual Eosinophilia — The unusual differential count presented in this case a very striking feature. The eosinophiles at one time reached 79 per cent of 31,000 white blood cells. It was the presence of this eosinophilia which at first made us consider a diagnosis of parasitic disease. The combination of the eosinophilia and subcutaneous nodules, with pain in the muscles, led us to a tentative diagnosis of trichinosis. In this connection it is of some interest to note that Kussmaul and Maier in their original report thought at first they were dealing with an unusual case of trichinosis because of the subcutaneous nodules and muscle pains, and only after autopsy did they discover the unusual character of the arterial lesions. Eosinophilia has been reported in a few cases,^{18, 20} although in none has it been so high as 79 per cent. This case did not show the presence of eosinophiles in the cellular infiltration in the periarteritic lesions. This is of interest in connection with the case reported by Ophuls,²⁶ in which eosinophiles were present in the cellular exudate but were not increased in the circulating blood.

Asthmatic Attacks — The asthmatic attacks occurred early in the disease, and even after disappearing recurred again shortly before death. The microscopic sections of the lungs in this case did not show evidence of periarteritic disease. It is possible that more careful examination including the branches of the pulmonary artery and the bronchial vessels might have revealed such evidence. The fact that a diagnosis

of periarteritis nodosa was not made at the time of autopsy prevented us from collecting as complete a series of tissue sections as otherwise might have been done.

Peripheral Neuritis—Peripheral neuritis was noted in this patient on my first examination. At that time there was a slight but definite atrophy of the smaller muscles of the hand and complaint of persisting neuritic pain in the forearm and hand. This neuritis progressed in the course of the illness until shortly before death it was a much pronounced feature.

Abdominal Pain—The abdominal symptoms shown were striking, the patient having recurring paroxysms of abdominal pain associated with nausea and vomiting. The pain was umbilical or epigastric in location and came on in attacks which persisted for varying periods. The pain was not accompanied by any evidence of peritoneal irritation, and there was no rigidity of the abdominal wall. The pain was not associated with the taking of food and was definitely remittent and during these remissions the patient was free from gastro-intestinal disturbances.

Skin Manifestations—Pruritus was an early feature which was largely disregarded because of the neurotic nature of the patient. This itching was at times accompanied by an urticarial eruption. At other times the pruritus was severe without any visible evidence of skin lesion. Purpuric spots were not frequent, the one purpuric area that was found was a large patch on the left leg which was undoubtedly factitious in origin.

Renal Insufficiency—The clinical evidences of renal insufficiency were slight as compared with the pathological evidence of kidney involvement. This is in part undoubtedly due to the fact that the kidney lesion was a tubular one resulting from the arterial disease. It is possible that had the patient escaped her terminal infection further evidence of nephritis would have appeared. Death was due in this case to an intercurrent infection, a terminal pneumonia with an acute pleurisy. It is interesting to note that the white blood cells which had been persistently high fell after the onset of the pneumonia. With this fall in the white blood cells there was an increase in the polymorphonuclears.

Duration—In this patient the symptoms of her last illness could be definitely traced back eleven months before her death. This is longer

than the average duration (4.7 months). The pathological changes observed in the vessels in this case would suggest a long course, the acute cellular reaction having subsided and hyaline-tissue replacement being well advanced.

Pathology—Except for the subcutaneous nodules, one of which was removed before death, and the character of which we failed to appreciate, there was no other gross evidence of nodosities of the arterial walls. This is not entirely unusual. Lamb has noted the fact that in five cases no gross evidence of the disease was apparent and the only evidence was microscopic.²⁰ There was an unusual degree of passive congestion of the liver in this case. This passive congestion was out of all proportion to the other signs of heart failure and was apparently a result of a disturbed circulation to that organ. The kidneys presented a most unusual appearance, grossly they showed areas of pallor, alternating with areas of congestion. There were, in addition, a few small cortical abscesses, possibly infected infarcts. Microscopically, the lesion was a degeneration of the tubules with very marked periarteritic involvement of the renal arteries. Involvement of the veins, reported in a few cases,^{2, 26} was not noted. The finding of several ulcerated areas in the ileum, which could be accounted for at the time of autopsy, is readily understood by the periarteritic involvement of the arteries in the intestinal wall shown in the sections. The ulcers were obviously early and could have produced no serious clinical effects.

SUMMARY AND GENERAL CONCLUSIONS

1 A case of periarteritis nodosa in a woman of middle age. The disease was of long duration, subfebrile, and characterized by intermittent abdominal pain, progressive weakness and peripheral neuritis of the upper extremities. Subcutaneous periarteritic nodules occurred, one of which was excised. The diagnosis was not made at that time, but was only established after study of the microscopic sections taken at autopsy. There were no other gross evidences of nodular arterial disease.

2 The eosinophilia, up to 79 per cent, is unusual.

3 This case throws no definite light on the etiology of periarteritis nodosa. The most likely possibility seems to be a rheumatic in-

fection, with the changes either the result of the invasion of the causative organism (streptococcus ?) or the result of a hyperergy to such an organism, in this disease this hyperergy being manifest in certain areas of the arterial system.

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THE DIAGNOSIS AND TREATMENT OF PERNICIOUS ANÆMIA*

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THE existence of a formative and healing power inherent in the organism, by which it preserves itself and combats morbid causes and their effects, is one of the great discoveries of Hippocrates. Even in the present era of medicine we are but beginning to understand the nature and location of some of these forces, to recognize their deficiency, and to devise methods of substitution when they are inadequate. Kendall made possible scientific thyroxin therapy, Banting followed with insulin for diabetes mel-

litus, and Minot and Cohen have just shown that pernicious anæmia may be controlled by the oral administration of an aqueous extract of liver.

Someone has aptly remarked that the first step in treatment is diagnosis, that the second is diagnosis, and that the third is diagnosis. This aphorism seems to be particularly applicable to pernicious anæmia. In its diagnosis due consideration must be given to every fact which can be elicited as a result of both clinical and laboratory study. There is no single characteristic of the disease which may not be present in other entirely independent pathological states. Par-

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æsthesia, asthenia, and progressive pallor with good nutrition, a lemon tint of the skin, atrophy of the tongue, and achlorhydria occurring in a middle aged person are at once suggestive of the disease but are not diagnostic. It is not many months ago since a case, in our experience, presented the above signs and symptoms, and these were considered sufficiently complete to disregard a blood report entirely unfavourable to the diagnosis of pernicious anæmia. Some months later the man reported with an inoperable carcinoma of the stomach. In another instance, to the chagrin of the hæmatologist, a case presenting typical blood features proved later to be a slowly progressing aleukemic lymphosis. It is only by the careful weighing of all available evidence that such mistakes can be avoided.

The time of onset of pernicious anæmia is commonly from the fifth to the seventh decades. The youngest case admitted to the Montreal General Hospital in five years was 31, and the oldest 72. The tint of the skin is often striking, varying from a pale waxy sub-icteroid tint to a definite ochre colour, or actual bronzing if the patient has had prolonged arsenic therapy. The nutrition is said to be maintained, but in our experience it is not uncommon to find a considerable loss of weight. Seventy-five per cent of our cases weighed 125 lbs or less on admission. The atrophy of the tongue begins at the tip and edges and may involve the entire dorsum. Small ulcers are not infrequent. Achlorhydria is universally considered as a *sine qua non*. The blood pressure is seldom if ever elevated. It is usually below the expectancy for the age, the highest systolic pressure recorded in our series was 150 mm Hg.

Degenerative changes in the central nervous system, as a rule involving the posterior and lateral columns of the spinal cord, are invariably found if they are looked for. During the years 1925, 1926 and 1927, out of 56 recorded cases, 48 showed undoubted evidence of this degenerative process. Prior to this time the incidence was found to be much lower, because it was not often recorded. The most common symptom to which this form of sclerosis gives rise is paræsthesia in the extremities, with numbness, tingling, or a sensation of "pins and needles". On examination, it is rare to find any alteration in tactile, painful, or thermal sensation, but the vibratory sense and two-point discrimination are almost constantly affected. Paresis of the legs is not uncommonly present, but it rarely proceeds to definite paralysis. The myotatic reflexes are

frequently absent, but they may be exaggerated and associated with marked ataxia and clonus. The involvement of the motor tracts is indicated by the Babinski phenomenon. The innervation of the bladder is rarely attacked—only twice in the series. An acute psychosis occurred five times. The following statement shows the frequency of the various signs referable to lesions in the nervous system.

Number of Cases (1925, 1926, 1927), 56, paræsthesia, 48, vibratory sense or two-point discrimination, 31, atonia, with diminished or absent reflexes, 9, ataxia, with exaggerated reflexes, 5, Babinski phenomenon, 8, acute psychosis, 5. Occasionally cases of pernicious anæmia make their appearance with signs and symptoms directly referable to the central nervous system. The main complaint is difficulty in walking, weakness in the legs, or paræsthesia. Clinically, there is little or no evidence of anæmia. On examination of the blood, however, the characteristic picture is present, though the actual reduction in the cytological elements may not be great. These cases are often most discouraging from a therapeutic standpoint, for, though the blood may improve, the cord changes are often progressive, eventually involving the brain itself, with a fatal outcome. In two of three such cases in our series treatment failed to influence the progress of the process, while in the third it was apparently successful.

The blood picture has long been considered to indicate a hyperactive process of destruction and regeneration. The anæmia, with excess of bilirubin seems to point to rapid hæmolysis. The abundance of immature cells, notably reticulocytes, macrocytes and megalocytes, indicates hurried formation. On the other hand, the late Professor Peabody's investigation rather suggests that this blood picture may be due to a functionally inefficient marrow with lack of utilization of blood pigment. Be this as it may, a high colour index, bilirubinæmia, macrocytosis, increase in reticulocytes, leucopenia with relative lymphocytosis, are features of the disease. In this connection it may be stated, that a smear of blood showing a predominance of large highly coloured erythrocytes is much more characteristic of pernicious anæmia than is a smear showing a number of small and deformed cells of various sizes and shapes, whether these be nucleated or not (see Fig 1).

Each case of possible pernicious anæmia should, therefore, be investigated and judged on the basis

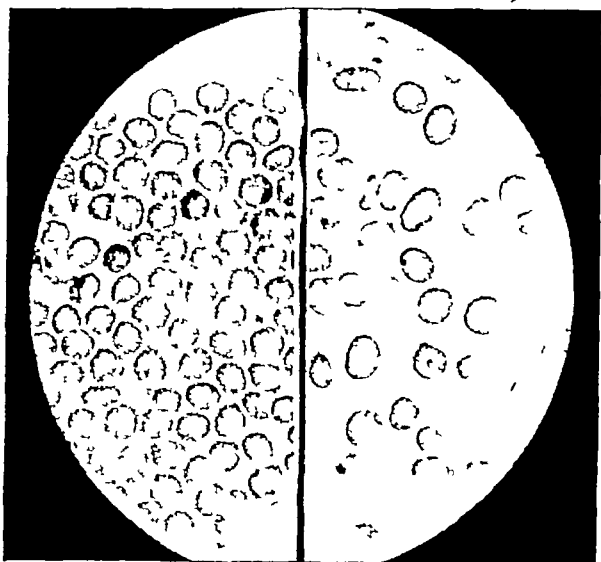


FIG 1—Microphotograph of a smear of blood obtained from the case represented in Chart III. For comparison with it, is a smear of normal blood photographed at the same time using the same magnification. The pathological cells (on the right) are larger, more deeply coloured, and more variable in size.

of the following: (1) Atrophy of the tongue and achlorhydria, (2) Pallor of the icteric type, (3) Signs of subacute sclerosis of the nervous system, (4) Reduction in the number, but increase in the size of the erythrocytes, high colour index, leucopenia with relative lymphocytosis, and increase in the plasma bilirubin, (5) Excess of urobilinogen in the urine. The absence of one or more of these features is insufficient to exclude the disease.

For the present effective treatment of pernicious anaemia let us pay ungrudging tribute to the fundamental observations of George Whipple, of Rochester. To him and to his co-workers should go the credit for the experimental demonstration that liver occupies the supreme position as a regenerator of blood. The successful clinical application of his experimental results, as applied to pernicious anaemia, was first demonstrated by Campbell P. Howard, now of McGill. The more recent and more detailed studies of George Minot and the Boston group of investigators have placed the liver treatment of this disease upon a sound practical basis, and have convinced practically the entire medical world of its clinical value, in an incredibly short period of time. From England, from Australia, and from the Continent, corroboration is forthcoming. Finally Cohen, in conjunction with Minot, was able to recover from liver an aqueous extract many times more potent than the original substance in the treatment of pernicious anaemia. The nature of this effective liver fraction and its

mode of action are both uncertain at the present time. In the process of its separation from liver, proteins and iron are removed by fractional alcoholic precipitation. The final water-soluble moiety contains the active principle. Speculation is rife as to its nature. It is claimed to be a vitamin, but the word "vitamin" is being used too loosely nowadays to convey any accurate meaning. It is known that the fraction contains a substance or substances in the polypeptid or amino-acid groups, for it gives the biuret reaction. All else is theory.

Little more is known of its mode of action. From Peabody's recent investigation of the bone marrow before and during liver treatment, it would seem that the active fraction enables the erythroblastic process to proceed to maturity. After liver therapy, though the marrow may have a less active appearance, functionally it is much more efficient, it can produce more red cells per unit of time. Whether this is accomplished by the neutralization of the effect of some unknown bacterium, or by the addition of a hormone deficient in the disease, or by some other means, is a problem yet to be solved.

The question of whether liver is effective in anaemias other than the Addisonian type is so frequently asked that a brief digression here may be pardoned. We have tried liver therapy in a considerable number of cases of the secondary type of anaemia, in which the etiology was obscure, with excellent results. One should recall that the entire experimental investigation which proved its worth was carried out on dogs with a secondary form of anaemia. The explanation would seem to be that whole liver supplies an abundance of iron in a readily assimilable form.

So much for the scientific side of liver therapy. We now turn to the more practical question of how to obtain results with it. The patient should be put to bed, as rest is an important factor, especially if the anaemia is severe. The diet should be well balanced, relatively low in fat, and should include raw or cooked liver in amounts from 200 to 500 grams a day. It is usually advisable to give dilute HCl with the meals. When the blood values have been restored to normal, which usually requires from six to eight weeks, its continued use is still a necessity. The daily amount may be reduced, and in certain cases three liver days a week seem to be adequate. The necessary amount in each individual case must, of course, be gauged by the results. A monthly check of the blood will tell whether

sufficient is being taken. What is adequate in one case may be inadequate in another.

The liver may be prepared to suit the palate of the patient. It may be ground up in soup, served as a cocktail, made into sandwiches, or even added to chocolate ice cream. It should not be boiled, however, as the potent portion is soluble in water.

Where the anæmia is grave and attended by nausea, vomiting, and intolerance to food, liver extract is indicated. We have tried the effect of four different samples, manufactured by three different pharmaceutical houses. The method of assay which was adopted was as follows. The patient was put to bed, and placed on an ordinary hospital diet, plus the extract to be tried in daily amounts equivalent to 400 to 500 grams of liver. The reticulocytes were counted daily. If at the end of a ten-day period there was no appreciable rise in the percentage of these young cells in the circulating blood, the sample was discarded as non-potent. An instance of the failure of one sample, and the prompt response to a second, is shown in Chart IV. Both the Lilly Fraction and the Connaught Laboratories Extract were found to be of satisfactory potency.

The effect of liver and liver-fraction therapy on the cord changes is less striking than on the blood. In most cases, probably the great majority, the progress is apparently arrested, provided the blood is maintained at a normal level. Occasionally, marked improvement occurs, especially in the tabetic type which seems to respond better than do the spastic cases. One of our cases, who took only sufficient liver to maintain the blood at the three million level, showed, after a time, progressive cord lesions of the spastic type. When he was given liver fraction the blood showed a rapid rise to the normal figure. With the aid of physical therapy the clonus and Babinski sign disappeared, and he is slowly regaining his normal gait. In a few cases, and this is specially true of those in which cord signs and symptoms predominate from the onset, little or no beneficial effect other than on the blood is noted, and the case progresses to a fatal termination though the blood count may improve considerably. Fortunately, this latter type is rare, there were only two in this series. Taking the disease as a whole, it is evident that early diagnosis and prompt adequate treatment are essential if permanent cord damage is to be prevented.

In the accompanying tables the effect of liver

and of liver fraction therapy are graphically represented. It will be noted that the first sign

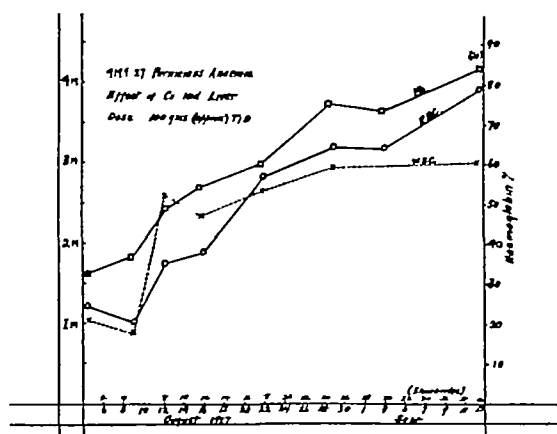


CHART I—This shows the effect of whole liver (300 gm. per day) on the hæmoglobin, the red cells, and the leucocytes in a case of pernicious anemia. The time period was 40 days, the same as in Charts II, III, and IV.

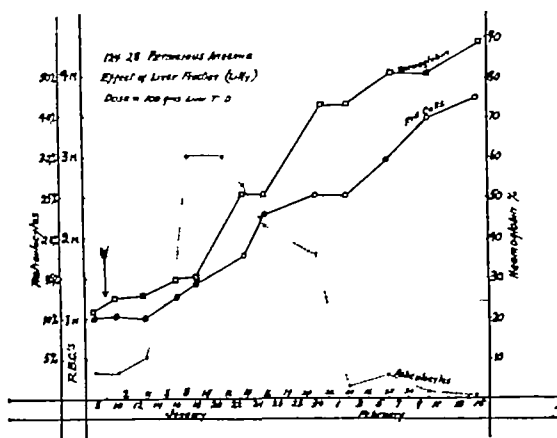


CHART II—This shows the effect of liver fraction (Lilly) (equivalent of 300 gm of liver daily) on the hæmoglobin, the red cells, and the reticulocytes, in another case. The arrow indicates the point at which treatment was begun. It is to be noted that the reticulocyte level rises before improvement is noted in the red cell count.

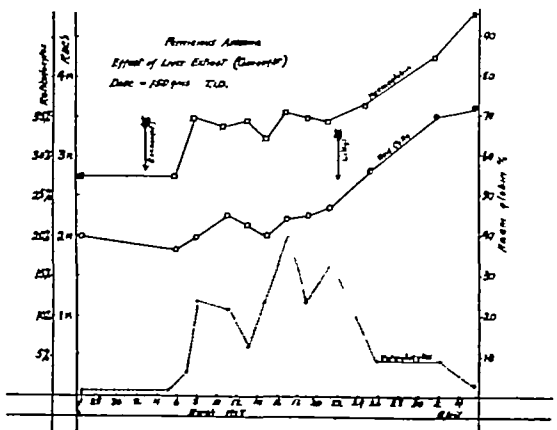


CHART III—This shows the response of another case to a different type of extract (Connaught Lab extract, equivalent of 450 gm of liver daily).

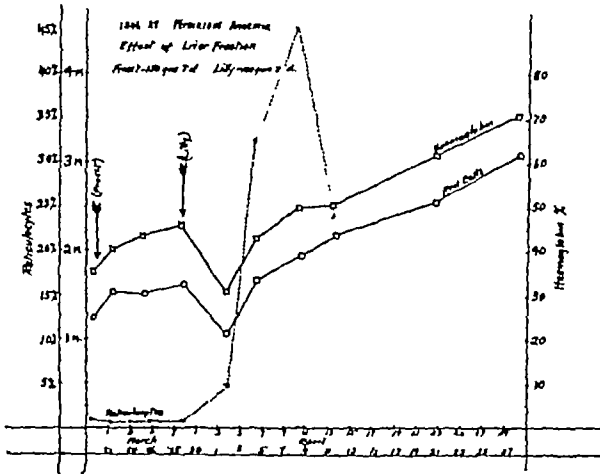


CHART IV—This shows the failure of a non potent extract of liver, and the prompt response to another type, used on the same case. The arrows indicate the points at which each was begun

of improvement in the blood picture is a rise in the reticulated red cells, indicating an improvement in the numerical output of cells from the bone marrow. This is noted for several days prior to a demonstrable rise in the actual number of red cells per unit volume of blood. During this time there is a considerable improvement in the patient's subjective symptoms. The tinnitus, or pounding in the head, disappears, the lethargy is replaced by alertness, and the anorexia by a desire for food. In a few days the rise in the blood count is noted. It progresses at an almost surprising rate until the three million level is reached, after which the rise is much more gradual. Perhaps the most interesting case, from a therapeutic standpoint, which has come under our observation, is one which has been watched continuously since 1919. (See Chart V.) During 1920 and 1921 the effect of transfusions was observed. In 1921 splenectomy was performed. In 1924-1925 transfusion was combined with iron and arsenic therapy. Finally 300 grams of liver daily was substituted. The improvement was rapid and so far permanent.

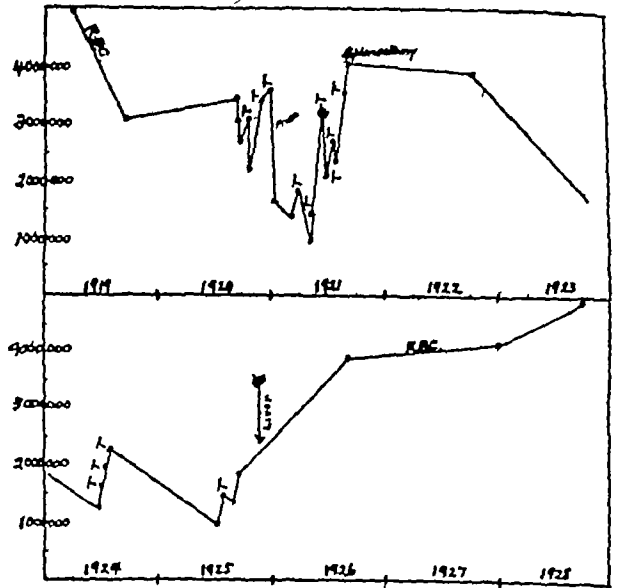


CHART V—This shows the red cell count of a case 1919-1928. T represents transfusion. Until liver therapy was begun, transfusion was supplemented by iron and arsenic therapy. The arrow shows where the patient began to take liver.

It is, perhaps, too soon to voice an opinion as to the permanency of the remission produced by liver fraction. Out of 25 cases who took the diet or extract, under constant supervision, 22 are now well after periods varying from one to three years. Two cases died as a result of progressive cord changes. One case refused to take adequate amounts of liver, and now shows rapidly advancing cord lesions though the blood picture has improved somewhat. Be this as it may, for the patient with pernicious anemia a new era has begun.

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Varicose Veins—H. O. McPheeters and Carl O. Rice, Minneapolis, believe that the treatment of varicose veins by the injection method should not be attempted by those who are not aware of the complications, as an unduly zealous individual may bring into disrepute through errors in technique a very satisfactory mode of treatment. The mortality rate following the injection treatment of varicose veins is much less than with the operative treatment. There is not, as yet, one solution alone which can be considered entirely adequate for very purpose. Each solution has quite definite indications. The injection treatment of varicose veins has passed the experimental stage and has been proved to

be a very rational form of treatment which should be accepted as supplanting other well recognized methods of therapy.—*J Am M Ass*, 1928

The inventor of soda water was the Rev. Joseph Priestley, who was a renowned chemist and especially known as the discoverer of oxygen. Being persecuted in England for his political views, he sought refuge in Pennsylvania, where his experiments aroused the interest of Dr. Philip Syng Physick, of Philadelphia. The latter induced a local druggist to prepare carbonated water for his patients, adding fruit juice as a flavouring. Thus, in 1807, the soda water business came into being.

THE POST-OPERATIVE ACCIDENT*

BY GEORGE H. MURPHY, M.D., C.M.,

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I HAVE so often referred to post-operative dangers and accidents in my efforts at clinical teaching, that it seems natural enough I should endeavour to work off a few thoughts on the subject on this occasion

CASE 1

Mrs F was fat and healthy, weighed 200 pounds, was forty years of age, and had a large umbilical omental hernia. She agreed to an operation which was performed in the usual manner. An attempt was made, after separating adhesions, to repack the herniated omentum into the peritoneal cavity. Failure, then removal of a piece of omentum and closure of the sac, with the peritoneum tending to stretch and tear under the strain. The sac is closed, but the pressure underneath is still pushing up into the open space, and you look uneasily at the anaesthetist who with a strange, unexplainable irony is letting the patient come out. One cough and you will be gathering up the fragments. It is an exciting moment. But finally the incision is closed, and one has made the best job in the circumstances. Catgut No 2, silkworm gut deep sutures, then a dressing strapped on with adhesive strips an inch wide, and a many tailed abdominal binder pinned on to help keep the dressings in place. The patient returned to the ward.

On the 7th day the deep sutures were removed, the wound was reported as healing well. On the 9th day patient took a coughing fit and something gave way. Being in the hospital at the time, I was hurriedly called. A number of intestinal loops were sticking between the tails of the abdominal bandage (now little more than strings gathered up in the middle of the abdomen). The incision was opened up. The omentum was bulging into the wound, some recently formed adhesions were now doing their full duty in preventing complete evulsion. This is the picture as one recalls the case. It is typical enough of that type where rupture of a post operative wound occurs from greatly increased intra abdominal pressure.

CASE 2

Sister M. was of the delicate type. Thin, pale, relaxed, anæmic, always tired, sleeping indifferently, nibbling at her food, while she kept about her work faithfully, she showed no energy, and was the very antithesis of bodily vigor. She had always been more or less so, but a bleeding fibroid had lately added a secondary anæmia to her physical imperfections.

With rest and careful nursing she was made an operative risk, and a subtotal hysterectomy was performed, from which she made a good recovery. Twelve days later, and two days following the removal of the sutures, in what seemed healing by first intention, she had a coughing fit, and the incision opened from end to end. When I got to her she was partly disemboweled. The many tailed binder was as usual gathered up in the middle of the abdomen like so many strings, and of no

protective value whatever. The nurse had covered the extruded intestines with sterile towels awaiting my arrival, so that things were not quite so bad as they could have been.

CASE 3

A man aged 72 years was operated on for acute appendicitis. The appendix had not ruptured, and there was nothing of note in the whole surgical entity, unless it were the marked senile sclerosis of his vessels. He became distended on the second day and was given a large soap suds enema with turpentine, without results. The distension was increased on the third day, without pain and vomiting, but with considerable distress. Those responsible for the conduct of his case decided that the bowels must be moved, and proceeded heroically to the task. One large enema after another was given, of soap-suds, turpentine, oxgall, magnesium sulphate, ammonia and molasses, with negative results, the patient's discomfort increasing proportionately to this therapeutic activity. On the fourth day severe abdominal pain and vomiting supervened, and all the signs of general peritonitis. In extremis the incision was opened for the purpose of stitching a tube in a loop of distended bowel, when it was found that the peritoneal cavity was half full of the enemata mixtures. The appendix stump was wide open, and the copious colonic floods had broken through into the peritoneal cavity as through a hole in the bottom of a rubber bag. Did the nurse not report syphoning back after each enema? She did, but good intentions and arithmetic are not always found combined. We are dealing with facts. Their exceptional character may hold some comfort, their reality remains undisturbed.

DISCUSSION

Cases 1 and 2 furnish the principal text for this paper. Case 3 must come in a class by itself, and I realize what a small part of the post-operative danger zone I shall cover in this effort.

The elements entering into the rupture of a post-operative abdominal wound are (1) increased intra-abdominal pressure, (2) feeble healing power of tissue, (3) suppuration, (4) defects in the mechanics of the incision and the wound closing, including defective catgut, etc.

Numbers one and two are illustrated in my first two cases, and they must bear the blame for the great bulk of this class of accident. Suppuration is often enough the cause of a weakened scar and consequent hernia, not often, of spontaneous rupture of wound and evulsion of viscera. The inflammatory process tacks the omentum and bowel down at the peritoneal margin of the wound, and, by thus plugging the opening, prevents a more serious disaster, not

* Read at the annual meeting of the Canadian Medical Association, Charlottetown, June 20, 1928.

the only time adhesions exercise a beneficent rôle

At staff meetings and clinical gatherings in general, when a case of wound rupture is reported, I invariably find that all discussion and speculation are directed to the fourth cause, and particularly to the question of defective catgut. Assuming that the wound is closed in the manner followed by 95 per cent of operators, I think this agent is the least of all the causes entering into the genesis of post-operative rupture. Catgut which stands the actual strain of holding together the layers, when stitching is completed, is quite likely to continue to do as much as we have right to expect of any suture in the circumstances. The deep intra-fascial silk worm gut strands are a great support, but they, too, have their limitations. There is no suture 100 per cent safe in such cases as the first. Two real factors are at work, (1) enormously increased intra-abdominal pressure, and (2) parietal tissue permeated with fat, which makes it brittle and easily torn. For this reason catgut is probably as safe as linen or silk, if not indeed safer, inasmuch as it is not so likely to cut through on account of its softer and stretching qualities. Split-muscle incisions and other anatomical side-stepping with the rectus and its sheath make for parietal security, but, for the average operator, have only a limited application.

The second case illustrates a type of post-operative rupture in which increased intra-abdominal pressure is not the main cause. There is no great pull on the suture line, and the skin and deep sutures are removed after what seems to be primary union. It is a feeble kind of repair, however, and is liable to let go. A sudden push on the abdominal wall from a sneeze or cough may be enough to open the whole wound. Distended intestines or anything which temporarily increases the intra-abdominal pressure may do the same. Scar tissue in such a patient matures more slowly, and calls for more careful support.

TREATMENT

By all the dicta of surgical common sense the treatment is prophylactic. Gathering up intestinal loops from among the bed-clothes is a bad business, particularly when you know it need not have happened. It is a real disaster, and unless skilled help is at hand, the patient and

all concerned are badly out of luck. The whole matter resolves itself into proper support of the abdominal parietes until the new scar may be depended upon to do its work.

Prof. Babkin, of Dalhousie University, has performed a number of experiments for me, in order to demonstrate some of the factors entering into what we have been calling intra-abdominal pressure. For the practical clinician perhaps the best concept of the whole mechanism is obtained by regarding the abdomen as a cylinder and the intra-abdominal pressure hydrostatic and distributed equally. Visualizing your lines of force with the patient in the recumbent position, the arrow points of the wound radiate from the centre in all directions, the sum total of the forces tending to stretch and rupture the abdominal cylinder. The lower end of the cylinder is closed and strongly reinforced with bone, fascia and muscle. Behind, the spine and the powerful contiguous muscles and ligaments present a practically unyielding structure along this section of the tube. The diaphragm and the belly wall are the yielding parts, and must furnish accommodation for any unusual push from within. The latter bears the real brunt, for the diaphragm, by its respiratory motion, acts something like a piston, modifying the pressure with each movement.

A newly closed abdominal wound is, therefore, among other things, a problem in physics. The forces drawing it apart are not concentrated on the edges of the incision, but extend all around the surface of the cylinder. The indication, then, is support all round, so that there is no unprotected spot in the whole abdominal wall. The best way seems to imitate nature's plan and supply an additional paries in the form of a heavy abdominal binder. It should be pinned on tightly and held below by wide strips of adhesive plaster extending over the outer surface of the thighs, and above by adhesive plaster extending along the sternum. An essential thing is that the binder have a grip on the thorax and on the pelvis. The mechanics of the binder is thus borrowed from the anatomical arrangement of the abdominal muscles and fascia, and in this way alone is it a real support. Without such attachments it will roll up from below, and down from above, by the patient's movements, and you will find, as I have so often observed, that the binder is little more than a few strings, if

it be the many-tailed type, or a very ineffective, puckered up band, in the middle of the abdomen Prof Babkin by artificially increasing intra-abdominal pressure in a number of cats showed experimentally the efficiency of this type of abdominal support

It has been objected that a binder tightly attached to the lower thorax embarrasses respiration, and adds to the post-operative distress of the patient With careful adjustment this need not be, and the splinting of the whole abdominal musculature lends a degree of comfort, such as obtains in a wounded limb after it is dressed and immobilized Every houseman I have had became a convert to this kind of post-operative bandaging, not only on account of its primary object in preventing rupture of the incision, but also on account of the patient's feeling of well-being as compared to his unbandaged neighbours in the ward It is hardly necessary to say that the bandage is applied on the operating table and the post-operative nurse knows her duty appertaining in the ward

Case 3 is quoted here to remind us that the human colon, wonderful piece of sewerage as it is, has nevertheless limits of endurance which may not be ignored. Have you ever on the operating table examined a colon in the condition usually described as post-operative ileus? What is it like? The bowel wall is so thin that you can hardly with the finest needle put a stitch in without perforating it It resembles nothing better than a blown-up rubber toy

balloon which is on the verge of rupturing It has no tone, it is a passive non-contractile tube that for the time has lost its power of responding to stimuli Surely the indication here is rest and not more exquisite forms of colonic torture Heroic efforts to move the bowels in such a case is flying in the face of physiological law, and clinical experience points a warning finger to just such a case as that quoted

If there is no response to a moderate sized enema it should be siphoned back, the patient given $\frac{1}{4}$ gr morphine, and allowed to sleep Often one finds that the bowels move after a few hours of rest without further enemata There seems to have been too much emphasis on the paralyzing effects of morphine on the bowel The precious rest it induces in such a case restores the whole physiological stance and knits up the unravelled threads of nerve exhaustion, so that the bowel comes back from a negative to a positive poise

In conclusion What are now pointed out are among the self-evident things, the trifles in connection with an abdominal operation One's observation is that it is the obvious, often, which is overlooked, and when one recalls even the exceptional instance where an excellent piece of surgical effort was wrecked on account of neglect of these trifles, he begins to wonder whether Michael Angelo's words might not be applied to our art as well "Trifles make perfection and perfection is no trifle"

THE COMPLEMENT FIXATION TEST, A MEANS OF FINDING CARRIERS OF DISEASE

BY A MACKENZIE FORBES, M D,

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DURING the early spring of 1928 a mild epidemic of scarlet fever was reported in the Montreal Unit of the Shriners' Hospitals

The first case followed a burn The possibility of scarlet fever following this burn was known—indeed, so well known that the physician who rendered first aid to the patient employed anti-streptococcal serum as prophylactic treatment, although the patient had not been in contact

with anyone suffering from scarlet fever The second, third and fourth cases were definitely due to contact The later cases were not due to contact but were considered to be due to the presence of an unknown and unidentified carrier How could this carrier be found? Apparently science had shown no way

It was known that scarlet fever was caused by, or at least is coincident with, an infection

by one of the strains of streptococcus. The doctrine of transmutation is accepted by many bacteriologists. An infection by streptococci may be shown in a variety of forms, at one time as one condition, at another time by another condition.

About this time a young adult, who had no connection or contact with the Shriners' Hospital, contracted scarlet fever. How and where was not known. The patient was sent to the Alexandra Hospital, an institution devoted to the treatment of contagious diseases. In approximately one week after the diagnosis of scarlet fever was made in this patient, the mother became infected with erysipelas. Within two weeks after the mother's infection the first patient's brother became infected with what two prominent physicians called malignant tonsillitis. These physicians would have preferred to have called this scarlet fever as they knew of the sister suffering from this condition, but they felt their patient's condition did not conform to type. Within three weeks after the diagnosis had been made a fourth case of definite and typical scarlet fever appeared in the same family.

The epidemic of scarlet fever in the Shriners' Hospital was militating against the usefulness of that institution. The extraordinary history of the four patients mentioned above was an incentive to thought. Scarlet fever is due to a streptococcus or at least is coincident with a streptococcal infection. Streptococci might show their presence in various ways, in some cases causing different conditions. Yet streptococci are wholly or coincidentally the cause of scarlet fever, and without streptococci there can be no scarlet fever. Streptococci must be present as a precursor to scarlet fever. If the complement fixation test is of any value, surely this was a

time in which it should be found of service. For this reason Dr F. Green, the Serologist of the Shriners' Hospital was instructed to take the complement fixation test in the four persons who had been in closest contact with the several patients who had contracted scarlet fever during the epidemic in that hospital. He reported that three of these patients were negative to the complement fixation test. The fourth was positive to polyvalent streptococcus (three plus) and also to scarlatinal streptococcus. After the elimination of this person the epidemic was at an end. This bore out and seemed to confirm the hypothesis, but one swallow does not make a summer. For this reason it was decided that a systematic investigation should be made of the complement fixation test in scarlet fever. Dr Lawrence J. Rhea, Pathologist of the Montreal General Hospital and Dr H. B. Cushing, Chief Physician of the Alexandra Hospital were asked to aid in assuming that such might be carried out. Through the interest of these two it was made possible for Dr Green to make the complement fixation test in about forty cases of scarlet fever which were being treated in the Alexandra Hospital during the summer of 1928.

Dr Green has handed his report to the Chief Surgeon of the Shriners' Hospital. It was published in the last number of the *Canadian Medical Association Journal*. While this most interesting publication does not prove the contention that carriers of scarlet fever can be found by the use of the complement fixation test a promising piece of work has been initiated and it is hoped that it will lead to further investigation and further knowledge of scarlet fever, and the value of the complement fixation test as a means of finding carriers or disease.

Dextrose-Insulin Treatment of Shock.—Dextrose insulin treatment of shock is discussed by Preston A. Wade, New York. He says the use of dextrose intravenously with insulin subcutaneously in the treatment of shock gives results which, in this series, seem more satisfactory than those obtained in cases treated by saline or dextrose solution alone. Cases of traumatic shock treated early respond most readily to this treatment. Cases of post operative shock treated in this manner show marked improvement. The optimal dosage is 1,000 c.c. of 5 or 10 per cent dextrose with 1 unit of insulin to 3 Gm of dextrose. Beneficial results are usually ap-

parent after 800 c.c. of fluid has been injected. Cases of shock in which the blood pressure is decreasing toward the "critical level" (80 to 90) should be treated immediately before the rapid fall which usually follows, with symptoms of severe shock.—*J Am M Ass*, June 9, 1928.

In 1927 only four cases of small pox occurred in Germany. These had all been introduced from foreign countries. In the same year no fewer than 14,500 cases were notified in England and Wales.—*Brit M J* 1928, ii, 552.

NEPHROSIS IN CHILDREN*†

BY GLADYS L. BOYD, M D

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II LABORATORY FINDINGS

NEPHROSIS is one of those diseases in which the aid of the laboratory is not infrequently sought in order to establish a definite diagnosis. This is more particularly true in the chronic cases which often present a clinical picture identical with that seen in other types of kidney disease. Distinctive deviations from the normal are found in nephrosis, not only in the blood, urine and tissue fluids, but in the altered metabolism of the whole organism.

The most striking change in the urine of these patients is the large amount of albumen it contains. It literally 'boils solid'. Estimations of its protein content show that it constantly contains anywhere from one to thirty grams per litre. This excessive loss of protein may continue many months, or even years, without much variation in its severity. Closer study shows that this protein contains a larger proportion of globulin than is usually seen in cases of proteinuria. This relative increase in globulin has been shown by Kollert and Starlinger¹ to depend on the increased globulin fraction of the blood serum. None of the excessive protein excreted can be accounted for by hæmaturia, as the finding of the latter absolutely precludes the diagnosis of uncomplicated nephrosis.

The amount of urine voided during the early acute stages or in an exacerbation is usually small. It becomes excessive during the period in which œdema is being excreted. During quiescent periods or after recovery the daily excretion is normal. Nocturia rarely occurs except during diuresis. Wide variations in the specific gravity of the twenty-four hour specimen are seen, but in most cases it is between 1012 and 1015.

Microscopically the urine contains many casts, numerous white blood cells, and an occasional red blood cell. The casts are at first chiefly granular, both fine and coarse, and are very

numerous. Later, they become fewer in number and hyaline ones are more common. The number and nature of the casts in nephrosis is interesting in view of Christian's² contention that all casts are composed of material from the tubular epithelium, the granular ones being young and the hyaline old. Less easily demonstrable, but by many regarded as pathognomonic, are the doubly refractile bodies found in the urine in these cases. Such bodies are seen in other types of renal disease in which extensive tubular involvement is present as well as in nephrosis.

The urine calcium in two cases of nephrosis has been studied by Scriver³ who reports its concentration to be very low. As pointed out in a previous paper⁴ low urinary calcium is found in all forms of kidney disease and is not distinctive of any one type. Retention of both sodium and chlorine occurs⁵ in the hydropic stage of this disease as in other types of nephritis, but shows no peculiarity which would differentiate it from any other type.

The appearance of the blood is suggestive very soon after its withdrawal. The corpuscles separate more rapidly than normal and leave a serum varying from slightly turbid to distinctly milky in appearance. Fibrin clots form quickly, probably because of the great increase in the fibrin content of the serum which Kollert⁶ has shown to be present in these cases.

The results we have obtained in the study of the blood in some of our cases of nephrosis are given in Table I. The percentage of corpuscles present in the blood is usually less than fifty, often as low as twenty to thirty. The cell-volume tends to become lower as the disease becomes chronic and during periods of dropsy. The depression is not always directly proportional to the degree of œdema present.

The low protein content of the serum is constantly present. Epstein^{7,8} some years ago pointed this out and further demonstrated the alteration in the albumen-globulin ratio due to the relative increase of the latter. The combination of low cell-volume, low hæmoglobin and low protein would suggest blood dilution as the common cause of all three. Lindner, Lundsgaard and

* From the Laboratories of the Sub Department of Pædiatrics, University of Toronto, and the Hospital for Sick Children, Toronto, and the wards of the Hospital for Sick Children, under the direction of Alan Brown, M.B.

† Part I, Nature, Etiology and Pathology, *Canad M Ass J*, 1928, xix, 46.

TABLE I
BLOOD FINDINGS IN NEPHROSIS

Case	Protein Per Cent	Corpuscles Per Cent	Turbidity of Serum	NFA	Creatinine	Urea	Fat	Cholesterol	Na	K	Ca	Mg	Total Base	Phosphates	Chlorides	Sugar Per Cent	Œdema	Notes
B R	4.10	30	+++	65	1.9	—	1938	209	—	—	—	—	142.0	4.8	420	—	+++	Terminal
A K 1	3.50	46	+	29	1.5	—	513.8	348	—	—	—	—	—	4.6	390	—	+++	Acute
A K 2	4.40	30	Sl	—	—	—	—	—	—	—	—	—	—	4.6	520	—	0	Acute
A K 3	7.20	45	0	—	—	—	—	—	—	—	—	—	—	5.4	375	—	0	Acute
E. L. 1	5.97	40	+	—	—	—	—	454	—	—	—	—	—	—	—	0.63	+++	Chronic
E. L. 2	6.34	36	+	25	1.5	—	454	358	—	—	—	—	—	—	565	—	0	Chronic
R B	5.03	33	+	25	1.3	—	—	830	—	—	—	—	—	5.2	230	0.60	+++	Subacute
E R	—	—	0	40	3.0	8	990	258	—	—	—	—	—	—	550	0.89	+	Acute
P C	—	—	—	30.2	1.1	22	620	198	—	—	—	—	—	—	560	0.90	+	Acute
N M	—	—	—	18.4	1.6	13.4	800	198	—	—	—	—	—	—	600	1.08	+++	Chronic
E R	8.06	31	+	45	1.5	—	467	170	—	—	—	—	—	5.2	510	—	0	Chronic
R C	—	—	—	23.1	1.2	14	600	140	—	—	—	—	—	—	600	1.08	+	Chronic
R D	6.05	29	++	28	1.5	—	—	155	—	—	—	—	—	5.6	560	0.83	+++	Chronic
E D 1	6.03	50	++	35	1.6	20.3	—	—	351	21.5	3.6	1.5	162.3	3.8	700	0.78	+++	Chronic
E D 2	5.00	41	++	40	—	25.1	—	200	399	21.0	4.6	1.8	158.3	3.6	710	0.84	Sl	Chronic
E D 3	—	—	—	28.5	0.2	—	—	—	—	—	—	—	—	—	—	310	Sl	Terminal
E. C	—	50	0	—	—	—	—	—	360	19.8	8.5	1.79	167.1	3.8	610	—	+	Acute
D H	—	50	0	—	—	—	—	—	356	20.5	10.0	1.70	165.6	5.0	650	—	++	Acute
A J	6.00	50	0	30	—	—	—	—	330	19.6	9.3	1.90	151.9	5.5	580	—	+++	Acute
A C	7.20	26	+	30	5.0	—	—	—	—	—	—	—	150.0	9.0	500	—	+++	Terminal
C B	6.10	41	Sl	35	1.5	—	—	—	—	—	—	—	—	—	—	—	+	Acute
L L	—	—	—	26.4	1.2	21	—	—	—	—	—	—	—	—	—	0.65	++	Chronic
L. G	—	—	—	38.5	1.0	—	—	—	—	—	—	—	—	—	520	0.72	++	Chronic
H D	4.84	37.5	+	40	1.5	—	—	—	—	—	—	—	—	—	—	—	+++	Chronic
D L	—	—	—	30	1.2	23.1	—	—	—	—	—	—	—	—	—	100	++	Acute
B S	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	+++	Terminal

Unless otherwise indicated, figures represent milligrams per 100 c. c. of blood except in the case of total base which is given in terms of c. c. of N/1

Van Slyke⁹ have shown however, by estimating protein per body weight, that such is not the case but that actual depletion of serum protein is present. Brown and Rowntree¹⁰ further demonstrated in the three cases they studied that the blood volume was normal. No close relationship is demonstrable between the degree of œdema present and the blood protein but the tendency is toward an increased blood protein after diuresis. Possibly the altered ratio between the albumen and globulin is more closely associated with the degree of œdema present, as Lindner *et al* have shown that this ratio falls when œdema is present in nephrosis.

Lipæmia of some degree is a sufficiently constant finding to justify the name lipæmic nephritis, frequently given the disease. It is not the only lipæmic nephritis however. Hyperlipoidæmia was present in only one of our cases, a terminal one of syphilitic origin. The cholesterol shows a relatively greater increase than the total fat. We agree with Harrison¹¹ however

that little help in differentiating between nephrosis and other types of nephritis with tubular involvement is given by the determination of cholesterol. The degree of turbidity of the sera in these cases appears a better indication of its fat content than it does in cases of diabetes. Below are the maximum, minimum and average figures we obtained in the study of the blood fat and cholesterol in these cases. The determinations were made by Bloor's method.

	Blood fat	Blood cholesterol
Maximum	1938	830
Minimum	434	140
Average	797	298

There is usually no evidence of retention of nitrogen and products in nephrosis, indeed the absence of such is usually regarded as necessary in making the diagnosis. Exceptions to this rule do however occur as a terminal event in otherwise typical cases which have run a chronic course. In such cases creatinin is most markedly increased. Nitrogen retention probably occurs

in cases which have been typical nephroses but have developed a chronic interstitial nephritis secondary to their nephrosis

The blood sugar is usually normal or low. Hyperglycæmia was present in one of our cases and has been reported in another by de Toni¹²

The plasma chlorides tend to vary with the degree and the stage of œdema present. Generally speaking, during the acute or hydræmic stages of the disease hypochloræmia is found. As the disease becomes chronic or recovery ensues they reach a normal or high level but are quickly lowered if for any reason œdema develops again. The plasma sodium is normal. Phosphates are normal unless acidosis is present. Magnesium is constantly at a low normal level and potassium at the upper limit of normality. The variation in the total base-content of the blood is not striking but it is usually about the lowest limit of normal, or actually decreased.

Clausen¹³ and Clark¹⁴ have demonstrated a marked lowering of the surface-tension of the plasma in nephrosis. Some reduction is present in cardiac œdema but is not nearly so marked.

Clausen finds this surface-tension reducing substance in the urine as well as the blood.

Characteristic changes are also found in the fluid which accumulates so rapidly and persistently in the thorax and abdomen. The turbidity of this fluid is so great as to suggest pyogenic infection. Cultures however are sterile and the sediment consists of broken down endothelial cells and amorphous material. The turbidity is due to the increased fat content. The specific gravity, salt and protein content of these fluids, is low.

The results obtained when the renal functional tests were done on thirteen of our cases are given in Table II. The most constantly present and valuable diagnostic aid is the normal blood pressure. Increased systolic blood pressure excludes nephrosis as the cause of the symptoms present, except in those rather rare cases in which the disease has a sudden stormy onset with cerebral œdema. The rise in such cases may be great but is necessarily of short duration. Persistent elevation of blood pressure never occurs in nephrosis.

TABLE II
FUNCTIONAL TESTS IN NEPHROSIS

Case	Blood Pressure	Phenol-sulpho-nephthalein*	Concentration†	Water‡	Added Salt	Remarks
L L	105-75	12 75	1011-25 N 1011	1007-30%	—	Chronic case
R D	102-72	—	—	—	Poor	Acute cerebral œdema present
"	98-64	—	1014-20 N 0	—	Poor	Acute case subsiding
J B	100-80	42	1020-25 N 0	1004-100%	Fair	Acute
N M	102-70	19 4	1030-32 N 0	1002-37%	Poor	Chronic
A K	98-60	—	1014-16-	1002	—	Acute
E D	100-75	—	1008-14 N 1014	—	Poor	Chronic
"	85-47	37	1011-21 N 1021	1004-44%	—	"
H D	100-75	20	1006-18 N-	1002-100%	—	Chronic
P C	—	38	1025-30 N 1030	1008-25 9%	Good	Acute
L G	100-80	—	1013-19 N 1018	1005-52%	—	Acute subsiding
E R.	98-70	38	1012-20 N 1012	1000-52%	Poor	Chronic
C C	—	51	1018-26 N-	1005-34%	—	Acute
E R	105-84	(1) 20 3 (2) 62 5	1020 N 1020	1005-30%	—	Acute
R C	102-70	(1) 22 5 (2) 58 3	1013-3- N 1030	1004-81%	Fair Good	Acute

*Phenolsulphophthalein is the percentage of the drug injected excreted in 2 hours. †Under concentration test the variation in specific gravity and its height in the night urine are given. ‡Under water test the lowest specific gravity obtained and the percentage of the intake excreted in the first 4 hours are given.

¶ The phthalein test appears to be an unfair test of renal function in this disease and is therefore of little value. The response to the injection is almost invariably poor and we feel that extrarenal factors, such as œdema and altered capillary permeability, prevent its quick absorption and that its slow excretion is therefore no indication of impairment of renal function.

The concentration test, simply done by determining the specific gravity of two hour urine specimens, while the patient is on a dry diet, offers the most valuable aid of any of the tests in making a prognosis. Functional deficiency in this case is usually most noticeable in the failure of the patient to concentrate his night urine as well as usual. Persistently low specific gravity of the night urine and decrease in its daily variations warrant a prognosis of chronicity, whatever the clinical condition of the patient suggests.

Water tests usually demonstrate some delay in the ability of the kidney to excrete water and a less marked depression of its function of diluting. They are of little value in making a prognosis as complete recovery is quite possible in spite of poor response to the test.

The excretion of added sodium chloride is always poor, and the test should not be done in these cases as it not infrequently initiates a relapse.

As pointed out in a previous paper, the laboratory furnishes some evidence of the systemic nature of the disease as demonstrated by the reduction of the basal metabolic rate. This depression of basal metabolism has been noted by a number of observers and is of too great magnitude to be accounted for by the œdema present. It is a constant finding in those cases of nephrosis studied by this means.

SUMMARY

1 The characteristic changes in the urine in nephrosis are, the large amount and the unusual nature of the protein it contains, the absence of gross hæmaturia, the presence of large numbers of casts and frequently white blood cells and of a doubly refractile body.

2 The distinctive findings in the blood are, its low protein content, altered albumen-globulin ratio, lowered surface tension, more or less lipæmia especially cholesterolaemia, and the practical absence of any evidence of nitrogen retention.

3 Serous effusions present suggestive evidence of the presence of the disease by their turbidity, low protein and salt content, and increased fat.

4 The blood pressure in uncomplicated cases is always normal or low.

5 The basal metabolism is depressed.

6 The concentration test is the only one of the functional tests that gives any reliable aid in making a prognosis.

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Case of Hæmaturia from Shoe Dye Poisoning—

O J Schmitt cites the case of a boy, aged 17, of athletic stature, who wore freshly dyed shoes for seven hours, when cyanosis and headache made their appearance. When seen, three hours after onset of the symptoms, his face and finger nails were deeply cyanosed and he complained of severe frontal headache. The rate and character of the pulse, respirations and temperature were normal. He was advised to bathe the feet repeatedly in water, to take a sponge bath and a purgative, to drink large quantities of water, to put an ice cap on the head, and to rest near an open window. The cyanosis and headache had entirely disappeared by the next morning, but the patient was advised to remain

quiet. The urine the following day was a clear, dark amber, acid in reaction, and with a specific gravity of 1.025. Two days later the patient complained of dysuria and bloody urine. The blood pressure was 124 systolic and 80 diastolic, the red cell count, 4,120,000, leukocytes, 11,850, and hæmoglobin, 75 per cent (Tallqvist). Alkaline drinks, together with a bland diet and rest in bed, were ordered, and in the following two days the pain gradually disappeared, the urine resumed its normal clear amber colour, and at the end of five days no red blood cells could be found microscopically. The analysis of the dye as reported by the chemist showed aniline as the source of poisoning.—*J Am M Ass*, 1928, xci, 726.

THE CALCIUM AND PHOSPHORUS CONCENTRATION IN THE INTESTINAL CONTENTS OF RATS IN RELATION TO RICKETS*

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IN the present paper are reported the results of an investigation of the concentration of calcium and phosphorus in different sections of the intestinal tract of rats fed on McCollum's rachitogenic diet 3143¹ and of a group of rats on a normal diet. The hydrogen-ion concentration of the different sections was also determined. The rats were divided into two groups, one kept inside in the dark and allowed to develop rickets, and the other exposed to the rays of the fall and winter sun, which produced a slight but definite antirachitic effect.

Each week a number of rats, twenty-five to twenty-seven days old, were placed on the rachitogenic diet, and a group of them exposed to the sun's rays each day for two hours. After four weeks the rats were killed under ether anaesthesia and immediately thereafter dissected and the intestinal contents removed by gentle pressure. The intestine was divided for this purpose into five portions: A, the upper half of the small intestine, B, the lower half, C, the caecum, and D and E the upper and lower halves respectively of the remaining large intestine. If during anaesthesia faeces were defecated these were collected and formed a sixth portion, designated F.

A composite sample was made of the contents of each of the six sections of the intestines of all the rats in a single cage. After withdrawal of a small sample for estimation of hydrogen-ion concentration each total emulsion was dried to constant weight on a steam-bath and the dried material was used for calcium and phosphorus determinations. On five occasions the hydrogen-ion concentration estimations were made on the material from each rat separately. This was done in order to learn what was the range of variation for the rats in the same cage. For the most part there was no marked variation, but occasionally one rat in a cage would show en-

tirely different pH values from all the others in the same cage.

Hydrogen-ion concentration was estimated by the Levy, Rowntree and Marriott colorimetric method, as applied to faeces by Tisdall and Brown².

For the calcium and phosphorus determinations Tisdall's micro-methods for use with blood serum^{3,4} were modified for application to dried material. For estimating total phosphorus the dried substance was ashed with a mixture of sulphuric and nitric acids in a large Pyrex test tube with the careful employment of heat from a micro-burner. The solution was made to volume, an aliquot part almost neutralized with concentrated ammonia water, and the original method for serum followed.

The procedure for estimating calcium and inorganically bound phosphorus is as follows. Place the weighed samples in 15 c.c. graduated centrifuge tubes and add to each about 5 c.c. of a six per cent solution of trichloroacetic acid. Mix thoroughly and extract by tapping the tubes at intervals for about fifteen minutes. Centrifuge and pour off the extract into small volumetric flasks (20 to 25 c.c.). Repeat the process with the residues. Only two extractions are necessary to remove completely the soluble calcium and phosphorus. Make the extracts to volume, and determine calcium and phosphorus in aliquot parts.

A characteristic condition of the intestines and their contents in the three groups of rats was observed during the dissections. There was little apparent difference among them in respect to the contents of the small intestine. In all, the upper part was filled mainly with mucus and the lower with mucus intermingled with small quantities of faecal matter. The contents of the large intestine showed distinct differences in the three groups. In the rats on normal diet the caecum was always large and filled with faecal material of a soft and homogeneous consistency, while in the rats on the rachitogenic diet the caecum was

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small and the contents scanty. The contents below the cæcum were in separate small masses in all the rats, but there was a marked difference in the consistency of these masses in the three groups of rats. In the rachitic rats the contents were rather hard, in those on the rachitogenic diet exposed to sunshine they were soft, sometimes almost watery, while in the normal rat they were firm but distinctly softer than in the rachitic rats. In both groups of rats on the rachitogenic diet there was more or less distension with gas in the neighbourhood of the cæcum. In these groups also the intestinal walls were thin and fragile, in contrast with the substantial condition of the walls in the rats on normal diet.

In the tables the calcium and phosphorus values are expressed as grams per gram of total solids. In the consideration of these values it must be kept in mind that they represent the concentration of calcium and phosphorus, not the actual amounts present. Under the conditions of the experiment it was not possible to establish any relationship between amount of intake and amount of intestinal contents. Accordingly a strictly quantitative collection of the material was not attempted.

Table I includes for each of the two groups of rats on the rachitogenic diet and for a third group on a normal diet hydrogen-ion concentration,

TABLE I

TOTAL CALCIUM AND PHOSPHORUS IN INTESTINES OF RATS AND pH, GRAMS PER GRAM OF TOTAL SOLIDS

Region	Calcium		Phosphorus		pH	
	No Rats	Calcium	No Rats	Phosphorus	No Rats	pH
Rats on normal diet						
A	18	0052	17	0145	21	6.3
B	18	0131	21	0133	21	6.4
C	21	0358	21	0222	21	6.4
D	12	0311	16	0186	21	6.8
E	20	0330	16	0200	21	7.1
F	20	0318	12	0186	21	7.2
Rats on rachitogenic diet Inside						
A	21	0060	22	0141	26	6.7
B	21	0133	22	0123	26	6.9
C	26	0425	20	0141	26	7.2
D	16	0375	10	0134	26	7.2
E	19	0432	10	0126	26	7.3
F	15	0443	10	0126	17	7.0
Rats on rachitogenic diet Exposed to sunshine						
A	13	0053	25	0148	25	6.7
B	20	0170	21	0117	25	6.6
C	25	0300	25	0136	25	6.6
D	16	0372	8	0102	25	6.7
E	16	0372	8	0102	25	6.6
F	8	0560	8	0120	21	6.9

total calcium, and total phosphorus for the six sections separately.

The total calcium and total phosphorus values for the rats on a rachitogenic diet show no essential differences between the rats kept inside and those exposed to the sun, with the one exception of the calcium content of the cæcum which was markedly higher in the rats kept inside. This striking difference will be discussed in connection with Table III.

The differences for both calcium and phosphorus between the rats on the normal and those on the rachitogenic diet are presumably largely due to the differences in the calcium and phosphorus intake as shown in Table II.

TABLE II

CALCIUM AND PHOSPHORUS CONTENT OF NORMAL AND OF RACHITOGENIC DIET, GRAMS PER GRAM OF TOTAL SOLIDS

	Calcium	Total Phosphorus	Inorganic Phosphorus	Organic Phosphorus
Normal diet	0083	0060	0023	0037
Rachitogenic diet	0107	0033	trace	0033

The hydrogen-ion concentration shows significant differences in the three groups. The normal rats have an acid reaction in the beginning of the small intestine and the reaction becomes more alkaline throughout the tract. The rats on the rachitogenic diet, whether exposed to the sun or not, have a more alkaline reaction at the beginning of the small intestine than the normal rats. With those kept inside the reaction begins at once to increase in alkalinity. On the other hand in the rats exposed to sunshine the contents remain at practically the same reaction throughout the course of the intestines. These findings are in general agreement with those reported by Tisdall and Price⁵, which were obtained from rats exposed to sunshine during the summer months.

In Table III the phosphorus values are expressed as inorganically and organically bound phosphorus. This table also shows the amounts of Ca and inorganic P in combination as tricalcium phosphate and the excess of calcium or of phosphorus, as the case may be, over the amount bound as tricalcium phosphate. This distribution was assumed because according to the work of Holt *et al.*⁶ on the solubility relationship of calcium and phosphorus compounds to hydrogen-ion concentration, the pH values found were throughout too high to admit of the presence of the acid phosphates in appreciable quantities.

Considering the calcium bound as tricalcium

TABLE III
DISTRIBUTION OF CALCIUM AND PHOSPHORUS IN INTESTINES OF RATS
GRAMS PER GRAM OF TOTAL SOLIDS

Region	Calcium			Phosphorus				
	No Rats	As Tri-calcium Phosphate	Excess	No Rats Inorganic	As Tri-calcium Phosphate	Inorganic Excess	No Rats Organic	Organic
Rats on normal diet								
A	18	0052	0	17	0027	0052	13	0066
B	18	0131	0	17	0068	0013	17	0052
C	21	0227	0131	20	0117	0	20	0105
D	12	0192	0119	12	0099	0	12	0087
E	20	0200	0130	12	0103	0	12	0097
F	20	0202	0116	12	0104	0	8	0082
Rats on rachitogenic diet Inside								
A	21	0060	0	18	0031	0040	14	0070
B	21	0128	0005	17	0066	0	17	0057
C	26	0122	0303	17	0063	0	15	0078
D	16	0105	0270	10	0054	0	5	0080
E	19	0101	0331	10	0052	0	10	0074
F	15	0062	0381	5	0032	0	5	0094
Rats on rachitogenic diet Exposed to sunlight								
A	13	0053	0	18	0027	0046	18	0075
B	20	0120	0050	19	0062	0	19	0055
C	25	0114	0185	21	0059	0	21	0077
D	16	0087	0285	10	0045	0	8	0057
E	16	0045	0327	10	0023	0	8	0079
F	8	0093	0467	8	0048	0	8	0072

phosphate, it is seen that in the small intestine the concentration is practically identical on the normal and the rachitogenic diets. This might reasonably indicate that practically all food has been absorbed or passed on into the large intestine and that the values are really those for the intestinal secretion. When the large intestine is considered, a comparison between the results obtained with rats on the normal diet and those on the rachitogenic is obviously of little value from the viewpoint of salt excretion since the intake of calcium and phosphorus was so different on the two diets. The two groups on the rachitogenic diet show no marked differences as regards calcium bound as tricalcium phosphate. On the other hand the amount of calcium not bound as tricalcium phosphate is much lower in the cæcum of the rats exposed to sunshine than in those kept inside. This may be taken as an indication either of increased absorption in the preceding small intestine or of a lessened excretion in the cæcum of calcium in some other form than tricalcium phosphate. We feel that this observation, that the difference in the calcium concentration in the large intestine of the two groups lies not with calcium bound to phosphate but in some other calcium compound is of considerable value, as it indicates that the calcium

absorption or excretion in relation to rickets may not be so intimately associated with the phosphorus as is now considered to be the case by the majority of investigators.

A consideration of the phosphorus concentration in the large intestine, whether in the inorganic form bound to calcium, or in the organic form, shows no essential differences between the rats exposed to sunshine and those inside. This lends further support to the view suggested by the calcium findings.

SUMMARY

1 Normal rats have an acid reaction in the beginning of the small intestine and the reaction becomes more alkaline throughout the tract. Rats on the rachitogenic diet, whether exposed to the sun or not, have a more alkaline reaction at the beginning of the small intestine than the normal rats. With those kept inside the reaction begins at once to increase in alkalinity. On the other hand in the rats exposed to sunshine the contents remain at practically the same reaction throughout the course of the intestines.

2 The total calcium content of the cæcum of rats fed on McCollum's rachitogenic diet and

kept inside was much higher than that of rats fed the same diet and exposed to sunshine

3 The calcium bound with phosphorus was essentially the same in the cæcum of both groups of rats fed on the rachitogenic diet

4 The difference in the calcium concentration in the cæcum in these two groups is thus due to calcium not bound with phosphorus

5 No essential difference was found in the phosphorus concentration in the large intestines of the two groups of rats fed on the rachitogenic diet

6 These observations suggest that the calcium

absorption or excretion in relation to rickets may not be so intimately associated with the phosphorus as is generally considered

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CONSTIPATION, ITS CAUSE AND CORRECTION

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THERE are few, if any, better definitions of constipation than that given by Ludwig Kast,¹ in which he has expressed himself thus "Constipation is a disturbance of intestinal function characterized by the insufficient or abnormally retarded elimination of intestinal contents" It is my intention to deal only with the so-called functional or idiopathic constipation, though it should always be remembered that careful consideration should first be given to determine whether or not the case in point is a member of this large group, or whether actual disease underlies the condition If any doubt remains in the mind of the doctor, a careful elimination should be made of extrinsic causes, such as pressure, or organic diseases of the type of cholecystitis, chronic appendicitis, etc, to which constipation is reflex Failing this, proctoscopic examination should be made and complete x-ray pictures be taken of the stomach, small bowel and colon

The question of the importance of this symptom to the welfare of the patient next arises Here we find a great diversity of opinion among authorities Some claim that it is of the utmost importance, since it underlies so-called auto-intoxication, others believe that it bears directly on essential hypertension, while still others associate it with hypotension There are those, on the other hand, who think that unless constipation occurs to a degree of severity approaching obstipation, it has little, if any, significance Whatever one's opinion on the subject may be,

the question cannot be disputed that, in the mind of the layman, constipation assumes a most important rôle Our daily newspapers are filled with advertisements for various patent preparations alleged to relieve or cure the condition This indicates the position it occupies in the mind of the public And, since we are, in a sense, the servants of the public, it is our duty to endeavour to deal with the condition intelligently

Out of three hundred consecutive cases reviewed there were found to be one hundred and twenty-six who gave constipation as one of their complaints, that is, forty-two per cent In addition to these, there were thirty-seven who, on being questioned, stated that they had had some trouble in this regard for many years Thus, if such are included in our figures, the percentage is raised to fifty-four

DIAGNOSIS

In diagnosing constipation the first essential is to ascertain whether or not the patient is truly constipated Indication of this is found in the stools The truly constipated will give a history of passing hard, dry faeces Many patients are found who believe themselves to be suffering from this condition, who, on being questioned, report the stools as of normal consistency This is not true constipation since, if there is a delay in the passage of the food residue in any section of the intestinal tract, fluid content must be lost, with the result noted A more

accurate estimation may be arrived at by the administration of carmine, given in ten-grain capsules, the evidence of the excretion of this dye will occur in the normal individual within twenty-four to forty-eight hours and will be complete in seventy-two hours

The old classification, spastic and atonic, is discarded by Erdheim,² though it would seem that it is still of service, if one remembers that there may be, in the one patient, a combination of the two types and that each large division is again subdivided into several branches. The stimulation of the vagus nerve results in increasing peristalsis which, peculiarly, may produce either diarrhoea or constipation, depending on the severity of the stimulation, since it may interfere with the normal peristalsis or may accelerate it. Stimulation of the splanchnic nerve, on the other hand, inhibits peristalsis. This nervous control is unquestionably influenced by the hormone derived from the mucosa of the intestinal tract, and it is probable that the spleen may also contribute further control.

Either type may be most accurately and readily diagnosed by a barium series, the atonic being shown by the large, somewhat relaxed colon with deepened haustra, the spastic by the small constricted lumen. Irregularities, however, may occur, with relaxation in one part followed by constriction without organic obstruction in another. This will complicate the picture and the treatment. It is neither desirable nor necessary to submit all patients to this expensive mode of diagnosing their condition. If, however, any possibility of organic disease exists, it is perhaps not out of place for us to stress again the importance of these measures.

The spastic type is usually found in the highly strung, so-called neurotic, individual, and in the great majority of these, the sigmoid colon, and sometimes even the entire colon, may resemble on palpation a firm, rope-like mass which is invariably tender. The atonic type, on the other hand, is usually found in the otherwise healthy individual, or in those showing characteristics of mild hypothyroidism (the lethargic variety). The colon of such is neither palpable nor tender. Boborygmus is often noted and there is usually a lack of tone in the abdominal muscles, with a resulting visceroptosis. One is too prone, however, to diagnose visceroptosis as the cause of the associated constipation. Ludwig Kast feels that such is never the case, though it may occasionally be an irritating factor. Even

radiologists now hesitate to consider displaced or slightly kinked colons to be of great importance, without signs of associated disease producing this abnormality.

Rectal constipation is often allotted a separate classification, though it is actually an atonic form, readily diagnosed by proctoscopic examination, the rectum being found lax, distended, and usually full of hard, faecal masses. This may be caused by repeated enemata, by the presence of hæmorrhoids, with resulting tenesmus and consequent suppression of the act, first conscious and finally subconscious, or it may be predisposed by a congenital tightness of the anal sphincter.

Before dealing with the cases under consideration one might mention the possible complications of any one of these three forms. Colitis may result from damage to the intestinal wall, this alternating with constipation, though in such cases malignancy must be watched for particularly. Fissura in ano, pruritus ani, and hæmorrhoids must be added to the list. When one remembers that colonic ulcerations may in turn serve as a focus which may act like other foci in the body (though showing an apparent preference for the abdominal organs, the gall-bladder, appendix, kidneys, etc.) one is impressed still further with the importance of this subject which is too often lightly dismissed by many of us.

ETIOLOGY

Considering in somewhat greater detail the etiology of constipation, there are numerous factors to be considered, many of which are the direct result of our civilization. Even in prehistoric days when, in the process of development, man assumed the upright posture, gravity was given a greater chance to favour ptosis. This was further aided in a later stage of our existence by the increasing sedentary nature of our lives. But, as before explained, many patients with a marked degree of visceroptosis enjoy normal evacuations, and so this must be considered as only one possible link in the chain. In women, pregnancy would seem to produce an increased tendency to this complaint. Here, three factors may play a part, first, the general laxity and resultant weakness of the abdominal musculature, secondly, the common occurrence of hæmorrhoids at the time of, and preceding, labour, with the resultant tenesmus and subconscious suppression of desire, and, thirdly, the mechanical interference during the middle and latter months, with

subsequent habit formation. Lack of exercise, too, plays a part, though it is questionable if it is so great a factor as is popularly believed. Patients in hospital may be controlled without catharsis by a rational diet-combination of carbohydrates and fats. It is claimed, on the other hand, that postmen and policemen are inclined to constipation. Since none of such is included in our series we cannot contribute any figures on this point. However, we do find many farmers suffering from constipation. Their diet, as a rule, is adequate and wholesome, somewhat rough in type, supplying one would think, sufficient volume and residue, nor is there any lack of exercise in their lives. But, on investigating their history further, we find that on leaving the house in the morning they often spend the entire forenoon in the fields and on their return the optimum time for evacuation has passed. This might likewise apply to postmen and policemen.

The drinking of water is also of importance, though experience does not lead us to believe it to have so marked an effect on the bowel as is generally supposed. It is, without question, an excellent diuretic, and serves its part in carrying away the waste products of metabolism, but, few cases of constipation are cured by its use. A glass of hot water, taken on rising, may serve to stimulate intestinal peristalsis, following this the morning meal adds its effect, and the after-breakfast habit is in this way influenced by the morning draught.

It is claimed that blood pressure has a relation to colonic stasis. Alferez,³ however, in reporting one thousand cases of essential hypertension, finds that only forty-six per cent give this symptom, this being no higher than the percentage found in this clinic of all patients. Low blood-pressure, likewise, has little demonstrable relationship to constipation. Only thirty-nine per cent of the cases here reported showed a systolic blood pressure of less than one hundred and fifteen, thus leaving the great majority of patients well within the normal range.

Sex also seems to be of importance, since forty-six per cent females, compared with thirty-seven per cent males, complained of constipation. No doubt the difference is explained, to some extent at least, by the process of child-bearing and labour.

Age, too, is a contributing factor, due in part to a changed manner of living, but principally to the physical changes that are undergone with

the advance of years, the weakening of the musculature, and the general loss in elasticity of the body tissue. Unfortunately, our group does not illustrate this point, as the majority of these patients varied in age from twenty-five to fifty-five years of age.

Some members of the medical profession feel that the endocrine glands play an important part, their secretions acting directly through the nervous mechanism. Of these, the pituitary and the thyroid seem to be the most important, and though at this time endocrinology is in its infancy, and the tendency is to find in these the hypothetical source of any trouble of which the true nature is veiled in obscurity, yet we are forced to admit the possibility of this influence. All cases of intestinal stasis do not show signs of glandular hypofunction, but one rarely finds a patient giving evidence of hypothyroidism, by lowered basal metabolism, slow pulse, low blood pressure, etc., who does not include in his list of complaints faulty evacuation of the bowel. It is also true that such patients respond marvellously to treatment directed along these lines, the administration of the glandular extract often being in itself sufficient to control the condition after the preliminary restoration of normal function.

The last factor to be considered is one of the greatest, if not the greatest contributing cause of constipation, that is, the practice of habitual catharsis. Mothers, anxious for the welfare of their children, start the regular administration of pills, castor oil, salts and similar laxatives at an early age. In many cases it is a hard and fast rule that Friday night is the regular time for such medications, entirely unmindful of any need for such measures. Thus, the habit is established in the young, and too often, as time passes, it apparently becomes a necessity. Cathartics are perhaps among the most constipating medications that one can take and should be used only as emergency measures. The same remark applies to enemata. This practice is fortunately not so widely indulged in in Canada as in many parts of the United States. Enemata have their purpose, but to educate people to believe that they require "internal baths," as they are called by their ardent supporters, as frequently as they require external bathing, is absolute folly.

SYMPTOMATOLOGY

Discussing the symptomatology of stasis with

any degree of accuracy is a matter of some difficulty, and yet there is a certain sameness that occurs with persistence in such cases, making it safe to assume that there is a definite relationship between these common features and constipation. Such are—A history of fullness after meals, belching of gas a variable time after food, vague abdominal discomfort, often dull, aching pain in the lower left quadrant, sometimes a similar discomfort in the right lower quadrant, suggesting on examination chronic appendicitis, though no history of an acute attack is obtained. Headaches are common. Anorexia, foul breath, coated tongue, occasional nausea, are complained of, and sometimes regurgitation of food after meals. Abdominal cramps, borborygmus, pain in the back, etc., may be added to this list. In practically all cases where the gastric acidity is normal and there is no associated organic disease, these symptoms greatly improve or disappear with proper control of the bowels.

The complaints generally associated with constipation, such as tiring readily, exhaustion, nervousness, lack of reserve energy, dizziness, palpitation, etc., are not, however, so amenable to treatment. Constipation is almost invariably found associated with migraine, and is also present in the majority of cases of epilepsy. When the normal intestinal function is restored there is usually some improvement in the symptom complex, but as it can be classed only as an improvement, one is forced to conclude that it is but one of several factors at work.

TREATMENT

And now, in conclusion, a word must be said as to treatment. No set rules can be applied as a routine, since the procedure to be adopted must of necessity vary materially with the type and with the cause in each individual case. We have indicated certain measures throughout. Unquestionably, a normal healthy life is essential, paying particular attention to the regularity of one's habits, to meals and hours of sleep. A glass of water on rising has certain benefits, the mechanism of which we previously explained. The time for going to stool should be definite and the optimum is, without doubt, immediately following the morning meal. The position at stool is important, the knees well flexed on the abdomen. The diet is most essential. There are few patients with functional constipation who will not in time be able to carry on normally on a diet rich in carbohydrates

such as fresh and stewed fruits, figs, prunes, green vegetables, sugar, etc. Roughage may be obtained through whole wheat bread, bran muffins, etc. As a rule, tea, cheese and excessive meat-eating should be avoided. Excesses of fatty foods should likewise be eliminated, though it is interesting to note in this regard that Florence H. Smith⁴ reports excellent results in the treatment of constipation by high fat feedings. Her prescribed diet consists in protein 66, carbohydrates 164, fat 224, which she states will control even the most persistent cases in three to five days, though she reports that a very occasional patient has resisted treatment for as long as three months. Psyllium seeds, flax seeds, bran, etc., are of marked benefit in many cases, supplying the necessary bulk for stimulation of peristalsis. Yet, these should be introduced with care in the case of patients who have been on soft bland diet for long periods, as they may by this sudden radical change be markedly upset, and the co-operation and confidence of the patient is lost before treatment is well inaugurated. Cathartics, enemas, etc., should be discontinued, though in the most obstinate cases it is impossible to suddenly accomplish this. A little cascara may be given primarily, but the importance of gradually diminishing this cannot be over-stressed. Small retention oil enemas are often useful in the presence of hard, impacted feces, such as are found in rectal constipation. Soap-suds enemas of the usual type should only be used when absolutely necessary.

Massage, while used by many, does not find a supporter in Soper⁵. The purpose of this massage is to stimulate peristalsis. It is questionable if it accomplishes this, and undoubtedly the intake of food forms a much more reliable stimulant. It is, however, still employed by many physicians, the massage following the lines of the colon and being of a gentle rotary nature. Even by this procedure, there have been several cases reported in which damage to underlying diseased organs has resulted. However, we are presupposing that such disease has already been carefully eliminated.

Mineral oil is our greatest ally in combating constipation, being second only to dietetic measures. This, too, however, has its disadvantages, producing at times a seepage from the rectum which is found embarrassing to the patient. Fortunately, however, in its emulsified form this disadvantage is largely overcome, and we have in many cases found it of the greatest value com-

bined with the old-time remedy, agar-agar. Several patients have recently asked whether there is any danger in the use of mineral oil as a causative factor in the production of cancer. This idea must have been obtained from some published article, but we were unsuccessful in finding anything dealing with this subject. Perhaps the idea arose from a paper by Robert Gibson⁶ in which he pointed out that seepage may produce an eczema about the anus which might in time assume a cancerous nature. However, he cited no case in which it had done so, and, as the seepage may be controlled by the use of the emulsion, it would seem safe to overlook this theory as a possible contra-indication until more material evidence is produced to support it.

In conclusion, certain drugs may prove useful

in chosen cases. Belladonna is an excellent adjunct to the treatment of the spastic type, similarly, bromides and luminal are found to have a favourable effect on the psycho-neurotic patient, pituitrin is useful in those giving signs of atonic constipation, thyroid extract, which we merely mention, having dealt with it previously, and olive oil which is useful in the undernourished type, in the absence of any suggestion of an associated cholecystitis.

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LEAD POISONING IN BRONZE FOUNDRIES*

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THE occurrence of lead poisoning among bronze foundries cannot be very uncommon, yet the medical literature seems to be devoid of references to the subject. The United States Bureau of Labor Statistics, in its *Bulletin No 306*,¹ which lists in tabular form the various occupations and their hazards, has not infrequently been accused of excessive zeal in associating lead poisoning with occupations where its occurrence is of academic interest only. This *Bulletin* mentions the hazard of lead poisoning in brass foundries, but does not include bronze foundries in the lead group. We have searched most of the text-books on industrial hygiene, and the various medical indexes, but have failed to find any reference to lead poisoning among bronze foundries. This is all the more strange since many laymen and quite a number of physicians are well aware of the hazard. During the past six months we have had the opportunity of seeing some ten cases of lead poisoning among bronze foundries, and have seen a number of other bronze foundries who showed very suggestive signs of lead poisoning, either in the Burtonian line or in the presence of basophilic stippling.

The clinical histories of these ten active cases present little of note. They were all more or less typical cases of plumbism, showing the blue line in the gums, stippling of the red blood cells, and lead in the urine, and complaining of severe abdominal pain and constipation. Several of them were considered sick enough to be admitted to the wards of the Montreal General Hospital, but none showed any of the distressing complications of palsy or encephalopathy. Most of the cases returned to their old work when their symptoms had been relieved and they had been placed on a lead-eliminating régime for a few weeks.

True bronze is an alloy of copper and tin, but other elements may enter into the alloy, such as aluminum, phosphorus and lead. Not infrequently brass, containing no tin at all, is loosely spoken of as bronze. Books to which the medical reader has ready access do not speak of lead as a common constituent of bronze. The usually reliable *Encyclopædia Britannica* mentions the possibility of traces of lead in statuary bronze, but does not refer to its presence in other bronzes. As a matter of fact lead is a common constituent of bronze, particularly of the so-called "railroad bronze," where its presence, at first accidental, is now considered very desirable. The piston packing-rings of locomotives contain

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nominally 50 per cent lead and 50 per cent copper. They are usually called bronze. Bearing metal contains from 12 to 20 per cent lead, because of the anti-frictional qualities of the metal. Roast and Newell,² in a recent paper, give the analyses of several bronze bearing metals. Two of these contain 15 per cent of lead and one 10 per cent. For the car journal bearings of the Pennsylvania Railroad at least 13 per cent lead is called for and one special high lead bronze contains 25 per cent.¹¹ A typical analysis of railroad bronze (supplied by the Operation Department, Motive Power and Car Equipment Sections, Canadian National Railways) is as follows

	Per Cent
Lead	15 to 22
Tin	5 to 7
Total of lead, tin and copper, minimum	97
Remainder, including zinc, maximum	3
Remainder, excluding zinc, maximum	1

EXPERIMENTAL CONSIDERATIONS

That molten metallic lead gives off visible fumes when at an "orange heat" or above it is obvious enough to those who work with it, but it seemed to the authors desirable to obtain some quantitative evidence on the question of its volatility. Reference tables give the boiling point of pure lead variously as from 1550°C to 1640°C. Even the lower and more probable of these temperatures is a dazzling white heat, far beyond any temperature to which any lead-bearing alloy is ever heated, and beyond the temperatures at which the products of lead smelting furnaces are produced. Also, according to Schenck and Dean,³ the vapour pressure of lead falls very rapidly with the temperature as shown by the following figures

Pressure, mm Hg

760 100 50 10 1 10¹ 10² 10³

Temperature, deg C

1640 1360 1290 1130 960 820 710 620

Nevertheless, as mentioned above, if lead is heated to a temperature of 900°C or more, and if the lead oxide formed is continuously removed, as by absorption in a porous vessel, or by a blast as in the process of cupellation, the lead is seen to produce fumes.

A similar condition exists during the casting of bronzes that contain much lead. These alloys have a high melting point, because the melting point of the copper is only slightly lowered by the lead and the comparatively small amounts of

tin and other metals that may be present. Indeed, the copper-lead mixture may be described as more of an emulsion than a true alloy, so slight is the affinity between these metals, and special skill is required to get good results in the founding of high-lead bronzes. The pouring temperature of these bronzes is from 1040°C to 1150°C.

While being melted the bronze is in a closed furnace and, further, the metal in the crucible is covered with a slag that checks volatilization, but while the castings are being poured the metal in the crucible or ladle is kept skimmed more or less clean, and the stream of molten metal itself is continuously clean. Thus we have conditions quite similar to those under which cupellation is conducted, and fumes or "smoke" of oxidized lead vapour proceed from the hot bronze and circulate through the foundry, unless suitable draft arrangements are provided to remove them.

The boiling points of copper and tin are both much higher than that of lead, namely 2310°C and 2275°C respectively, and the bronzes in question are free or very low in zinc, (which is volatile), so it seems evident enough that we are getting lead fumes under the circumstances described. However, to get a quantitative idea of what the observed smoke represents, the following preliminary experiments were carried out.

Experiment A—Two grades of standard lead bronze were used: (1) railway journal bearing bronze, containing about 15 per cent lead, and (2) piston packing-ring metal nominally 50-50 copper-lead. Part of both lots was kept for analysis. For heating, the alloys were contained in crucibles made by drilling a 1-inch hole in a cylinder of pure, solid graphite (round electrode). The surface of molten metal in this crucible would have an area of, say, 0.79 sq ins, because the surface tension produces a convex surface. The crucibles were charged into a furnace, and fired with gas and air already heated to a temperature of about 825°C. Temperature was measured with a Leeds and Northrup optical pyrometer.

The heat was gradually increased, care being taken to maintain a strongly reducing flame, until at the end of an hour the temperature was 1150°C, and the surfaces of the molten alloys were clean and mirror-like, practically all over. At the end of two hours the temperature was

about 1250°C and was then somewhat reduced. After another twenty minutes' heating, the crucibles were removed and quickly cooled by a jet of gas, preventing any but very slight surface oxidation of the alloys. The alloys were weighed and analysed, with the following results:

	Weight of alloy	Analysis*	Weight of lead
A 1 Journal Bearing	gram	per cent Pb	gram
Before	107.931	14.02	15.132
After	105.809	12.40	13.120
	2.122		2.012
A 2 Ring Metal			
Before	50.846	57.73	29.35
After	49.222	55.1	27.9
		58.8	
	1.624		1.45

The agreement in the results on the bearing bronze (A-1) is as close as could be expected, possibly a full analysis would explain the small discrepancy by showing a loss of zinc. In the case of the ring-metal (A-2) the agreement is not so good, because of the difficulty in getting a true sample of the alloy, which is very liable to segregation. Why the loss in this case is so much less than in case A-1 we cannot definitely explain. There would be more or less complete liquation as the alloy fused, resulting in a layer of lead below and a layer of copper above, the copper having no tin content (as most other bronzes have) dissolves very little lead, and with a lower lead concentration at the surface we have less volatilization.

Experiment B—A weighed amount of pure commercial lead was heated in an ordinary plumbago crucible (graphite-clay mixture) during the latter part of the furnace treatment described under experiment A. The charge was put in when the furnace was about 1200°C and was heated for forty minutes, then was cooled under a gas jet. An empty control crucible of the same kind was heated along with it, but was not needed, as the lead came out easily after heating. The results are as follows:

	Control Crucible	Charge	Loaded Crucible	Lead
	gram.	gram.	gram.	gram.
Before	81.448	162.224	86.458	75.766
After	80.274	159.649	85.055	74.534
Loss	1.174	2.575	1.403	1.232
		1.403		
Loss of lead		1.172		1.232

* Analysis by J. T. Donald & Co., Montreal, Que.

The exposed area of the lead in this case was 1.23 square inches. The loss is comparable with that in experiment A-1, which was in the furnace much longer, thus:

Disregarding temperature, which averaged higher for B than for A, and calculating the loss of lead per square inch per minute, we have,

	Loss Pb/sq. in./min.
Bronze (A-1)	0.019 gram
Pure lead (B)	0.025 gram

This is a reasonable concordance, considering the temperature difference.

OBSERVATIONS IN A FOUNDRY

In order to apply the results of the preliminary laboratory experiments described above, observations were made in a representative bronze foundry during one afternoon's casting operations.

At the time, melting was being done in several gas-fired one-pot crucible furnaces. The gas flames escaped directly into the melting room, coloured green by copper, but there was no sign of lead smoke from this source. Normally in this foundry the large output of lead-carrying railway bearing bronze is melted in a completely closed electric arc furnace 1,000 pounds at a time. The gas furnace crucibles hold about 350 pounds each, two or more crucible melts are combined in a large ladle for large castings. The output of the foundry is from 10,000 to 15,000 pounds per day.

The crucibles of molten alloy as they come from the melting furnace are covered with dross produced from dirt and sand on scrap metal, oxide, etc., and fume very little. The dross is skimmed off and the alloy immediately produces a cloud of fume, or "smoke." In the case of "phosphor-bronze" the surface remains clean and continues to fume, apparently the oxygen at the surface of the metal selects the phosphorus (which is there for that purpose) and the fume probably consists largely of phosphorus pentoxide, but if the alloy contained any considerable amount of lead it would volatilize and go off as oxide also. Usually phosphor-bronzes are low in lead. On the other hand, non-phosphoric bronze (lead-carrying "acid resisting" bronze was observed on the day in question) scums over with a film of oxide very quickly after being skimmed, and

then fumes very little from the surface in the crucible, but copiously from the stream of alloy as it runs into the mould. High-zinc brasses fume very badly owing to the volatility of the zinc, and "ornamental yellow" brass may contain considerable lead, but "manganese bronze" (really high-zinc brass) is free from it. "Steam metal," containing 5 per cent each of tin, zinc and lead, we would expect to have intermediate properties.

Several observations were made of the time required to pour a crucible of alloy, including the time the stream of clean, fuming metal is actually running into the mould, and the total time a crucible is in hand. These times vary with the size of the castings being poured, and other factors, but average about three minutes and six minutes respectively.

In regard to the surface exposed we would estimate, say, twenty-five square inches for six minutes for the partly skimmed, slightly fuming surface in the crucible, and the equivalent of a cylinder three inches in circumference and eight inches long, say, another twenty-five square inches for three minutes for the stream running into the mould.

Using our figure 0.02 gm. loss of lead per square inch per minute, we find that 4.5 gm. of lead are discharged into the atmosphere of the casting room in the six minutes required to dispose of each 350 pounds of alloy. Assuming a room fifteen metres square and five metres high, and no circulation of fresh air, we have a concentration of four mgm. of lead per cubic metre of air. There is, of course, a circulation of fresh air, but the draft is quite likely to carry the concentrated fumes directly toward one of the workmen handling the crucible.

PREVENTION

In order that we may formulate an intelligent program for the prevention of lead poisoning in foundries certain fundamental facts should be known.

1. What is the dangerous concentration of lead fume in the air?

2. How much lead can be absorbed daily by an average man with comparative safety?

3. What percentage of inhaled fume or dust is retained?

With regard to the first two questions our knowledge is admittedly inaccurate, for any

investigator is handicapped by the difficulty of getting human subjects to experiment upon, and experiments on animals cannot be considered strictly applicable to human beings. Legge^{4, 5} has estimated that with a concentration of 0.5 mgm. of lead per cubic metre of air men will rarely develop colic and never encephalopathy. Teleky^{4, 5} believes that a daily dose of a little more than 1 mgm. of lead over a period of several months will cause plumbism.

The third question as to what percentage of inhaled fume or dust is retained has recently been considered by Drinker, Thomson and Finn⁶. These authors, using human subjects, experimented with zinc oxide fume (particle size about 0.4 micron), zinc oxide powder, ["Kadox" (particle size about 0.15 micron)], and marble dust (particles varying from 0.3 to 6.0 microns). Their determinations were remarkably uniform. For the zinc oxide fume the percentage of dust retained averaged 57 (± 10.8), for the "Kadox" the percentage averaged 56 (± 7.3), and for the marble dust the percentage figure was 54 (± 9.2). The average percentage retention of the three was 55, with a probable error of ± 9 . We believe that these determinations are as accurate as it is possible to obtain, considering the rather marked variability in different subjects, but it is only fair to state that Lehmann, Saito, and Gföhrer⁷ in 1912 obtained a much higher percentage retention with white lead dust. However, since the experiments of Drinker *et al* were with fume and more nearly fit our present problem, we are inclined to accept their results.

If we assume, therefore, that approximately 50 per cent of inhaled dust and fume is retained, we find that the concentration figure of 0.5 mgm. per cubic metre of Legge, and the dosage figure of 1 mgm. per day of Teleky, check rather well. If the tidal air of an average man is 500 cc. and sixteen respirations are taken per minute, the amount of air inhaled by a man during eight hours is 384 cubic metres. At a concentration of 0.5 mgm. per cubic metre 1.92 mgm. of lead are inhaled and 0.96 retained, which corroborates Teleky's figure very well.

The prevention of lead poisoning in foundries, or anywhere else, for that matter, resolves itself into the problem of preventing the workmen from inhaling more than a toxic amount of

lead per day For the purpose of our calculations we have accepted the statement that 1 mgm of lead per day is the maximum dose allowable*

From the calculations given earlier it will be seen that when a crucible with a 350 pound charge of lead alloy is poured, probably 45 gm of lead are discharged into the atmosphere At the point of discharge the fumes are very concentrated and may be directly inhaled if they happen to blow toward the men doing the pouring When the fume has been distributed throughout a room of the size mentioned (1125 cubic metres) the concentration becomes 4 mgm of lead per cubic metre Through leakage this concentration will gradually become less and less until the time of the next pouring when a fresh charge of lead is introduced into the room, and the cycle starts again We have not had facilities for making actual determinations of the lead concentration in the air, and we doubt whether they would be of great value on account of the difficulty in obtaining representative samples We are assuming that the maximum concentration of lead in the room under consideration varies from 4 mgm per cubic metre to zero concentration, with an average concentration of 2 mgm per cubic metre That is, we are assuming that under the worst conditions (namely, in winter when the windows are closed) the men in the moulding room are constantly exposed to an atmosphere averaging 2 mgm of lead per cubic metre of air This, according to Legge, is at least four times the safe concentration Under these conditions the problem is to prevent the men from absorbing 1 mgm of lead per day

PROPHYLAXIS

Masks—In regard to masks it may be said at the outset that it is very difficult to get men to wear them for eight hours a day In the presence of dust and heat masks become very uncomfortable, and at best they should be looked upon as a last resort Furthermore, it is questionable whether the average commercial mask (such as the so-called pig-snout mask) is of much value in the presence of very fine fumes

Brown,⁸ in his study of lead poisoning among men working at the scrapping of naval vessels, where the lead in the paint is volatilized by the

oxy-acetylene torch, states that experimentally the Burrell modified industrial mask, with type GMC-1 canister, proved to be the most satisfactory of several masks tested The canister, which is connected to the mask by a flexible hose, contained four absorptive layers, soda-lime-charcoal, cotton, soda-lime, charcoal This mask appeared to retain the lead fume when tested in the laboratory, but "it failed to reduce the incidence of plumbism" Barreto, Drinker, Finn, and Thomson⁹ state that if the original Burrell dust mask is impregnated first with a fine fume like zinc oxide its efficiency becomes quite high The Burrell dust mask consists of a face-piece connected to the dust filter by a non-collapsible hose The filtering medium is large in area (approximately 840 square inches)

The Mines Safety Appliance Company's standard mask, type M-S-A, which depends on furnishing the man with pure air through a hose connection, might be expected to furnish good protection It would not be practicable to have men wear this type of mask with unwieldy hose connections at foundry work, however

It is our belief that it is not reasonable to require men to wear respirators all day long at their work, and that some other method of protection should be devised

Ventilation—It might be practicable to dilute the lead fumes to a safe concentration by the introduction of outside air As a matter of fact this is what appears to happen in summer, for there can be little doubt that the incidence of lead poisoning in bronze foundries is greatly reduced in summer when the windows are wide open

If we assume that 350 pounds of lead alloy are poured every hour, according to our calculations 45 gm of lead are discharged into the atmosphere at each pouring To dilute this to 0.5 mgm per cubic metre of air, 9,000 cubic metres of air per hour will be required This is equivalent to 5100 cubic feet of air per minute This is a high calculation since we have made no allowance for natural ventilation A properly designed fan of less than two horsepower could supply 5100 cubic feet of air per minute¹⁰ The running expenses would be chiefly in the heating of the air and should not be high, for the normal problem in a foundry is one of cooling

rather than heating. With a plenum system of ventilation the air should be delivered through multiple ducts in various parts of the room, but concentrated chiefly about the moulds. It should enter the room at about the head level. With the introduction of large quantities of air to a relatively small room, exhaust fans may be required. If the room is large, however, and the ceiling high with a monitor roof, the delivered air can find ready escape. In connection with the use of exhaust fans, there seems to be an impression among foremen and others that their installation in side walls or roofs solves the problem of ventilation. Such fans draw their air locally, they exert a negligible suction at a distance of more than ten feet, and to expect an ordinary exhaust fan to remove fumes from a moulding operation many feet away is unreasonable.

The furnaces should be equipped with hoods connected with exhaust fans. The degree of volatilization of lead is probably not high at the furnaces on account of the dross covering the molten metal, but doubtless some fumes escape and the problem of removing them at this point is not difficult. It may be practicable to remove the fumes over some of the moulds by local exhaust ducts, and in the foundry where most of our observations were made this has been done in the case of the piston packing-rings. In many moulding operations the use of local exhaust ducts is hardly practicable, for in order to make them effective they must be placed close to the moulds and this is likely to interfere with the movements of the moulders.

It is universal knowledge that certain individuals are much more susceptible to lead poisoning than others, and in the presence of relatively small amounts of lead will develop poisoning. To eliminate these, and to keep an accurate check on all the workmen, the men who are exposed to the risk of plumbism should be periodically inspected by a physician who is qualified to detect the early signs of the disease. Such an inspection should be carried on at least twice a month, and preferably weekly.

Milk should be furnished to the men. It is a time-honoured preventive of lead poisoning and there is a rational basis for its use.

We subscribe to the view that most of the lead is absorbed through inhalation rather than ingestion. Nevertheless other routes of absorption should not be neglected. To reduce the chances of swallowing lead, provision should be made for eating away from the moulding room, and facilities for washing should be provided. Smoking and chewing should be forbidden while at work.

SUMMARY

Ten cases of lead poisoning which we have seen recently are reported, not because they present anything of unusual interest from the clinical standpoint, but because they occurred among bronze foundries.

It is not universally known that bronze frequently contains lead, sometimes in large amounts, and that in the melting operation a very high temperature is reached, high enough to cause considerable volatilization.

We have determined the volatility of lead from bronze at the temperature at which it is treated for casting (2100°F), and find that it is in the neighbourhood of 0.020 grm per square inch of molten surface per minute.

Calculations are given as to how much lead is probably volatilized during the operation of pouring the metal into moulds, and suggestions are made as to how this lead fume may be removed or diluted, so as to reduce the hazard of plumbism, which is often very great.

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WHAT IS A PÆDIATRIST?*

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DEFINITION—Originally a pædiatrist was one who with reasonably good mental equipment, had sacrificed his time and money in such prolonged study and experience in children's diseases that he could in all honesty offer to practise in that line only, and, by giving unusually complete and scientific examination with treatment to his patients, deserve an honest high reputation in the minds of his patients and of his confidères as a genuine specialist in his chosen branch. Are these the qualifications of all or most men who are to-day crowding into the ranks of specialists, and are we doing our share to prevent the name of pædiatrist being debased as much as "professor" or even "doctor" or "specialist" have been in the past by unscrupulous people?

With haste and disregard of correct spelling, the overwhelming majority of us even in universities and hospitals are too utterly careless of scholarship to preserve the diphthong in "pædiatrics" as if we did not know that 'pæd' is a Greek root meaning 'child' and 'ped' is a Latin root meaning 'foot'. Hence one has been sincerely asked by laymen evidently better educated than we are if pædiatrists are not foot or corn specialists. With paradoxical action while the first syllable has been shortened the word has been lengthened with a love for long resounding words into pædiatrician with very doubtful gain.

Is Pædiatrics a Specialty?—This might be answered from the point of view of either (a) the faculty (b) the practitioner or (c) the patient.

(a) There are still those who hold that pædiatrics is merely a part of clinical medicine, calling for no division either in college or hospital. Such men are not interested in the diseases chiefly functional of young infants any more than they are keen to bother about the

heavy mortality of "summer diarrhoea", and yet they prevent competent, trained men doing so through academic channels. But this has been amply if tardily corrected by at least our large universities and need not detain us here except to confirm the claim that from the academic point of view, pædiatrics is a special branch certainly in regard to children up to about ten years of age.

(b) Practitioners have shown less delay in seeking consultants and have long recognized the specialty, not only as a means of sharing responsibility in moribund cases but also for the benefit of their patients even if as all specialists complain they do not seek our aid as early as we think they should.

(c) The patients at least the youngest and most liable to fatal disease cannot speak for themselves but of course it is the patients who should settle the question whether the community needs a specialist for sick children. It is safe to say to a pædiatric audience that the last two decades have amply proved that the pædiatrist, even from economic and political points of view (e.g. in vital statistics) has emphatically won a position of value to the public.

If then we are dealing with a genuine specialty why notice the odd delinquent who would enter the ranks without tan preparation? All branches of activity have such black sheep. Only because the hard-won good name of pædiatrics has been gravely threatened by the increasing numbers of men who pose as pædiatrists and demand specialists' fees without honestly fitting themselves for their work by any tan amount of study or experience. In writing so one is not citing conditions only in one's own home city or province or country. Information comes chiefly from clear-headed general practitioners chatting at medical conventions or conditions all over Canada and in many parts of the United States. Many men go away to one hospital in one city only, for

* Read at the annual meeting of the Canadian Society for the Study of Diseases of Children at Vancouver June 29, 1928.

several months, others for weeks only (!) and return "specialists" though scandalous and dangerous men. Men have left another specialty to become pædiatrists over night, others, after being general practitioners, become "pædiatrists" with no special training whatever. One would not mention this, were not some such men at once welcomed in and appointed to universities and hospitals which thus countenance and encourage the untamed "specialists." Another source of information is the kind of treatment a consultant meets and which must result from hopelessly scant training.

The Remedy—One might be thought pharisaical in appointing himself a judge over his confrères, certainly, his writing would be utterly futile unless he had very practical suggestions as to the prevention or cure of this condition. While the motive of this little paper is to call attention to the present menace to the good name of pædiatrics, our only justification lies in making the following practical suggestions.

SUMMARY

1 The good name of pædiatrics is, to a very great extent, in the hands of those who appoint doctors to teaching posts in the universities, to clinical posts in hospitals, and who give permission to work in clinics.

2 Let us accept only those with at least good average ability. Men have gone away to study for a specialty, who from lack of ability, could never by any amount of study become real specialists.

3 Appoint those only who can and will study for a year or two in this line.

4 Favour those who have had several years' training in general medicine in hospital, or better, in several years' practice.

5 Insist on prolonged industrious study in at least three large pædiatric clinics.

6 Favour those who have studied in Europe as well as in America.

7 Heartily support and encourage those who will sacrifice time and money in so preparing themselves for respectable and honourable special practice.

The Influence of the Crusaders in Medicine—"Between the years 1095 and 1270 A.D., Europe was rocked by the militant Crusaders. Morbid religious faith, working upon a disturbed nervous system, caused people to have distorted views of life and made them fall an easy prey to the adventurers who stirred up crusading expeditions. The travelling crusaders represented all types of people and as they advanced by slow marches, begging food and clothing as they went, they spread disease in every community they came in contact with, and prepared the way for countless epidemics. The sickness promoted by the crusaders gave wide scope for the exercise of medical skill.

"Roger, King of Sicily, published an ordinance compelling physicians to be registered by the district magistrates, after suitable examinations, and the schools of Salerno and Naples were designated the only colleges for the instruction of qualified physicians. This ordinance appears to have been effective in improving the status of medical men, because we find such men as Albertus Magnus (1193-1280), Vincent de Beauvais (1221-1264), Hugo de St. Victor (1087-1140), Thomas Aquinas (1225-1274), and Roger Bacon (1214-1292) becoming active in medicine. These were all college-trained doctors and well-rounded scholars who did valiant work in uplifting medicine. We may

say, therefore, that the crusaders, while spreading serious epidemics of disease, and causing much sickness, turned public attention to the need of medical schools and better medical education. These benefits must be credited to them, as well as the establishment of hospitals, poorhouses, baths, and asylums throughout Europe."—*The Physician Throughout the Ages*, New York, Capeheart Brown Co.

Synthetic Substitute for Ephedrine—With the comparatively simple and inexpensive synthesis of phenylethanolamine sulphate by a new method, Hyman Miller and George Piness, say they have at hand a drug comparable pharmacologically to ephedrine but considerably less toxic. Clinical evidence points to the inactivity of phenylethanolamine sulphate on oral administration, and to an advantageously weak pressor but disappointingly weak bronchodilator effect on hypodermic injection. The field of the greatest usefulness of phenylethanolamine sulphate in therapeutics is apparently as a topical application in the nose, in which its activity is in every way comparable to that of ephedrine. The addition of a new drug to the already overcrowded pharmacopeia requires considerable justification. This justification, they believe, may well be found in the evidence here presented.—*J Am M Ass*, 1928, xci, 1033.

Case Reports

PERNICIOUS VOMITING OF PREGNANCY, WITH AUTOPSY FINDINGS*

By S. KOBRINSKY, M.D.,

*Lecturer in Obstetrics, Faculty of Medicine,
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Winnipeg

Mrs. A. G., French Canadian, Roman Catholic, aged 26, was admitted to St. Boniface Hospital on May 19, 1928, on account of persistent vomiting.

Family History—Her father, mother, nine sisters, and three brothers are alive and well. Two sisters died from pernicious vomiting of pregnancy, one at the age of 19, when her first pregnancy was advanced to 2½ months, the other at 26, in the third month of her fourth pregnancy.

Personal History—The past history was negative save for an attack of influenza in 1918, when she was ill one week. Menstruation began at 14. It was regular every twenty-eight days and lasted four to five days, not profuse nor accompanied by dysmenorrhœa. She was married in November, 1927, and her last menstrual period began March 9, 1928.

History of Illness—She felt fairly well until the end of April when she began to have pronounced nausea and vomiting, chiefly in the morning. This condition grew worse and was aggravated by severe headaches. From May 14th, she was unable to retain any food taken by mouth.

Physical Examination—A fairly well nourished young woman. The heart and lungs were negative. The fundus uteri could be palpated just above the symphysis. Blood pressure was 128-90. Urinalysis: albumen and sugar not present, acetone + + +, diacetic acid +, pus +.

The treatment consisted in absolute rest in bed, nutrient enemata, 500 c.c. of 10 per cent dextrose intravenously daily, with 20 units of insulin.

Some improvement was noted, and on May 24th the acetone and diacetic acid had dis-

appeared from the urine, but albumen, hyaline casts, red blood cells and bile were present. Theicterus index was 27, van den Bergh's reaction, immediate direct. Evacuation of the uterus was considered.

On May 26th Dr. Lennox Arthur saw the patient in consultation. Following this, evacuation of the uterus was advised but consent could not be obtained. In addition to the dextrose, 25 c.c. of 10 per cent magnesium sulphate was administered intravenously every two hours for two days, later, three times a day. Again there was apparent improvement and she was able to retain some fluids by mouth. On June 4th, the icterus index was 17, the urine, however, contained a trace of albumen, acetone and occasional casts. Three days later she grew much worse.

Urinalysis: acetone, a trace, diacetic and albumen, a faint trace, hyaline casts present. Blood urea nitrogen was 14 (normal). In spite of treatment she became comatose and died on June 13th.

An autopsy was performed by Dr. Jas. Piendeigast, pathologist to the hospital, on June 14th.

Post Mortem Findings—Lungs showed congestion of their bases with moderate œdema. The pericardial sac and heart were negative.

The peritoneal cavity was dry. The alimentary tract was distended with gas, but the serosa and mucosa showed no gross changes. The pancreas was negative. The spleen somewhat small but soft, the pulp a pale red. The gall bladder had a distended wall of normal thickness, but the lining showed a definite strawberry appearance, background was pale yellowish and green in colour, no calculi. The liver was rather small weighing 1380 gm., softer and more friable than normal, of a uniform very pale colour and of homogeneous texture, without any signs of hæmorrhage. Kidneys, left, 125 gm., right, 120 gm. Both were alike in appearance, quite congested, with smooth surface, the capsule stripped easily. Adrenals well developed and apparently normal. Ureters and bladder were negative.

* From the Department of Obstetrics, St. Boniface Hospital.

The uterus was the size of a large orange and soft. It contained an apparently healthy fetus (the history pointed to a three months' pregnancy).

Microscopical Examination—The predominating feature in the kidneys was the marked tubular changes, parenchymatous or cloudy swelling, the glomerular apparatus was intact. The appearances were those of the nephrosis of pregnancy.

The liver showed no microscopical hæmorrhages, no cellular infiltration. Cloudy swelling was present. There was also some fatty degeneration, but this process was by no means general. The gall bladder (strawberry), spleen, adrenals, pancreas, ovaries showed nothing peculiar.

SUMMARY

A fatal case of pernicious vomiting of pregnancy in an apparently healthy young woman.

Death of two sisters from the same cause.

Operation to evacuate the uterus refused because of religious convictions.

Apparent, though only temporary, improvement following administration of magnesium sulphate solution.

Autopsy findings by a skilled pathologist.

This opportunity is taken to thank Sister Moquin and Dr. Dwyer for their untiring efforts in this case.

A CASE OF RAT-BITE FEVER

By R. CAMERON STEWART, B.Sc. (ARTS), M.D.,

*Associate in Pædiatrics, Royal Victoria Hospital,
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Rat-bite fever, as the name implies, is a generalized infection following the bite of a rat. The condition presents a picture so definite in its outlines, and responds so promptly and favourably to the proper therapeutic measures, that it is undoubtedly a clinical entity due to a particular infective agent. The disease is so distinctive in its later stages that it can then be easily differentiated from an ordinary septicæmia, the latter, which might result from a rat-bite as readily as from any other kind of bite, and may cause some diagnostic difficulties during the first few days of fever.

Rat-bite fever, also known as *Sodoku*, appears

to be more common in the Orient, and much of the best work on the subject has been done by Japanese investigators. The disease was first described in detail by Miyake in 1900. Treatment with Salvarsan was introduced by Hata about 1912. This type of arsenical therapy has proved so uniformly successful that it still remains the one of choice.

The disease has several major characteristics, among which are

1 The preliminary bite of a rat or of some animal, as a cat or a ferret, which has been in contact with rats.

2 An incubation period of ten to thirty days or more, usually about two weeks.

3 A temperature curve which runs a typical course. It is suggestive of malaria or relapsing fever, the paroxysms recurring at regular intervals of several days, the temperature rising gradually to a maximum on the second or third day and falling by crisis, often accompanied by sweating. During these periods of fever there may be headache, muscular pains, dysphagia, thirst, nausea and vomiting. The leucocyte count rises, reaching 15,000 or more.

4 Skin reactions, of several forms,

(a) Reaction at the site of injury—redness, tenderness, and swelling, in other words, an erythema. The outlines are well defined, the edges slightly raised and of somewhat deeper colour, there is no tendency to abscess formation.

(b) A similar reaction over the proximal lymph-nodes, which may become palpable.

(c) An erythema about the neighbouring joint, when the bite is on an extremity.

(d) A general macular eruption over the body and extremities, consisting of circular reddish spots, from one to three or more centimetres in diameter, slightly elevated, with sharply defined edges. These spots tend to disappear on pressure and do not itch or desquamate. After one or two of the paroxysms of fever the spots may become somewhat ring-shaped, resembling the lesions of erythema multiforme.

During the remissions of temperature the local erythemas and macular spots fade but do not disappear.

5 Rapid response to treatment with Salvarsan or similar arsenical preparation. One injection usually effects a cure.

If untreated, the duration of the disease is indefinite. The mortality is said to be about 10 per cent.

The marked periodicity, so similar to that exhibited by relapsing fever, the prompt response to arsenical treatment, and the positive Wassermann reaction that can sometimes be demonstrated, all suggest that the condition is one of spirochætal infection. These organisms have been found in the blood in so many human cases that they are accepted as being the causative agents. The particular variety involved is called *Spirochæta morsu muris*. It would seem that rats and similar animals are somewhat prone to infection with spirochætes and often harbour these organisms without obvious signs of disease.

The following are details of a case which last year came under observation.

An infant of seven months, previously healthy and with irrelevant personal and family history, had the left cheek bitten and the upper eyelid scratched presumably by a rat. Some redness and swelling followed and the baby was taken to the Out-Patient Department of a hospital, where hot boracic fomentations were advised. The condition improved within the next few days and the child appeared practically well. Thirteen days after the injury the lid again became swollen and red. Three days later the patient was admitted to the Royal Victoria Hospital. There was persistent fever and the swelling of the lid caused the eye to become closed. The swollen lid was later incised, but no pus was obtained.

Twenty-five days after the initial bite a macular eruption was noticed. The temperature became definitely relapsing in type, the skin

lesions brightening and fading with its rise and fall. These lesions were of the typical character already described: a circular area of erythema with well defined edges, surrounding the inflamed and swollen eyelid, another area in front of the left ear, over the lymph node, macules about twenty-five in number, distributed over the face, trunk, and extremities. During the periods of fever the child cried a little and appeared to dislike being handled, probably an indication of malaise. The general condition remained good in spite of the high temperatures registered during the exacerbations, there seemed to be no acute pain, and nourishment was well taken.

There was a moderate leucocytosis counts varying from 10,200 to 18,600. The urine was negative. Old tuberculin 1/10 mgm intradermally gave a negative reaction.

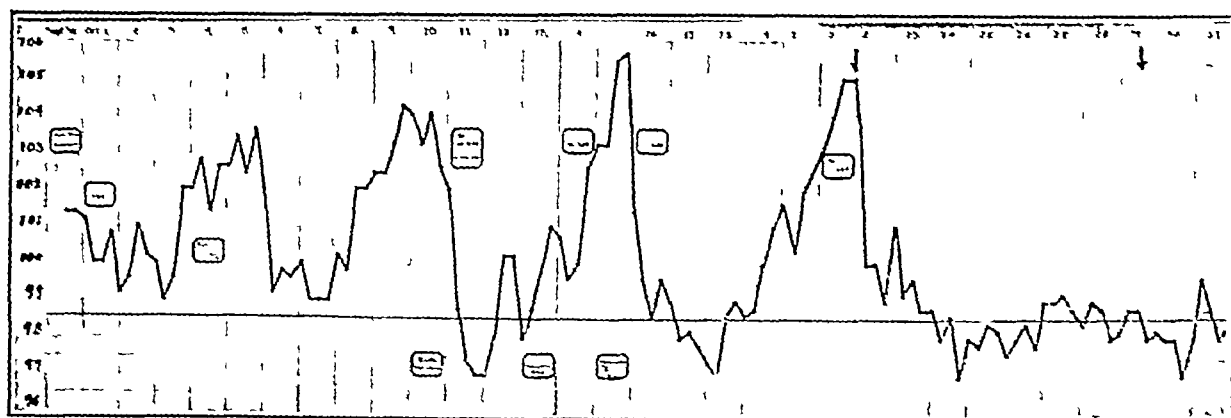
The Wassermann test on the blood was negative.

Several attempts to demonstrate the spirochæte were unsuccessful.

As there seemed little doubt in regard to the diagnosis and it was deemed inadvisable to delay treatment too long sulpharsphenamine was given on the thirty-sixth day after the injury with rather dramatic results. The injection (indicated on the chart by the first arrow) was made at the height of an exacerbation 70 mgm being given intramuscularly. The weight of the baby was 7 kilos (16 lbs).

The temperature thereafter remained practically normal, the skin reactions rapidly disappeared and the eye opened with the subsidence of the swelling of the lid. As a precautionary measure a second dose of sulpharsphenamine (105 mgm) was given eight days

CHART I



Rat bite fever showing course of temperature before and after treatment

after the first (second arrow) The child was discharged from hospital a week later, apparently well There has been no return of any symptoms suggestive of the condition.

This case, from the records of the Department of Medicine, Royal Victoria Hospital, is presented as one of comparative rarity on this continent, though sporadic instances of the disease are reported from time to time The infection has been used, like malaria, to some extent in the treatment of neuro-syphilis

Acknowledgement and thanks are due to the Departments of Ophthalmology and Bacteriology of the hospital for their co operation, and to Dr H. B. Cushing, Professor of Pædiatrics, McGill University, and Physician to the Royal Victoria Hospital, for invaluable aid.

A CASE OF EARLY PREMATURE LABOUR WITH SURVIVAL OF THE BABY

BY WILLIAM J. STEVENS, M.D., C.M.

Attending Obstetrician, Ottawa Civic Hospital

Ottawa

The survival of premature infants under the usual period of viability is sufficiently rare as to warrant reporting this case

The mother was a primipara, 27 years of age Her statements are considered authentic and reliable

The patient had had four months' antenatal care Her history was irrelevant, except that her menses had always been somewhat irregular She suffered moderately from morning sickness Her pelvic measurements were normal, also the urine and blood pressure

On the night of March 31, 1928, the patient went into labour without any apparent cause and was taken to hospital She was given rectal synergistic analgesia with good success and was delivered normally at 8.25 p.m. of a female baby weighing 3 lbs and measuring 36 centimetres long Wassermann tests were negative The baby appeared to be quite premature and weak Everything was done to save the child, and its survival, on account of the duration of the pregnancy, becomes the chief point of interest

The patient's last period was August 1, 1927, she was married on September 7, 1927, her delivery occurred on March 31, 1928, making the birth approximately 204 days after marriage, or about 6½ months

After delivery, the baby was oiled, rolled in a cotton jacket, and treated in a special compartment for premature babies Its temperature was maintained by means of a hot water bottle, and the room was kept at 85° and the humidity between 50 and 60° Gauze diapers were used and the baby practically left unhandled The baby was given 5 per cent lactose solution, one drachm every two hours with a medicine dropper On April 2, the mother's breast milk, diluted with equal parts of 5 per cent lactose, was given (four drachms by gavage every three hours) The evident need of fluids was shown, and on the fourth day the baby received 30 c.c. of normal saline intraperitoneally Further intraperitoneal injections were given on the 5th, 7th, 8th, 10th, 12th, 15th, 17th, 19th, 20th, 21st, 22nd and 23rd of April On April 16th the baby was put on a formula by gavage of butter soup, breast milk not being available Later on lactic acid milk was used, then protein milk with cod liver oil by gavage and later by Brecht's method The temperature varied from 98° on March 31st to 99.4°, with the exception of 103.4° on April 17th, when daily intraperitoneal feedings seemed to substantiate the apparent lack of fluids The weight of baby, 3 lbs at birth on March 31st, fluctuated between 2 lbs 10 ozs on April 2nd, 2 8 on April 12th, 2 10 on April 15th, 2 12 on May 1st, 2 15 on May 10th, 3 lbs 3 ozs on May 12th, 3 9 on May 25th, 3 11 on May 30th, 3 15 on June 7th, 4 2 on June 14th, and 4 lbs 6 ozs on June 21st, the date of baby's leaving the hospital on the mother's insistence, the eighty-second day of its age

Since discharge from the hospital the baby has received good average maternal care at home and the protein milk formula has been continued On September 14, 1928, the baby weighed 8 lbs 14 ozs, on September 21, 1928, its weight was 9 lbs 1 oz and it is doing very well

We have had no other case as premature as this one in which success has attended the raising of the baby

Retrospect

THE PRESENT STATUS OF THE TREATMENT OF VARICOSE VEINS BY INJECTION

By L. H. McKim, M.D.

Montreal

Although the pioneer work on which this method of treatment is based dates back to 1851, when Pravaz injected ferric chloride in the treatment of aneurysm, very little was heard of it, the procedure being regarded by the majority of surgeons as a much too dangerous method, on account of the possibility of embolism. During the past two years, however, many different workers having reported successful results, it is felt that a brief review of the general consensus of opinion at the present time may be of interest.

Gay, in his book on Varicose Disease, published in 1868, mentions the application of the ferric chloride injection treatment of Pravaz to the treatment of varicose veins, and refers to its use in England, France, and Germany at that time. The bulk of the credit for the development of the method in recent years seems to be due to French workers. Tavel, in 1904, was apparently one of the first to use the method. More recently, Sicard and Gaugier¹, Genevri², Forestier³, Delater⁴, and Troisier⁵, may be mentioned as important contributors to the subject. Linser⁶, in Germany in 1912 and also in 1925, reported work along the same line.

Recent articles by three workers may be taken as summarizing the general trend of English, French, and American opinion at the present time. The authors of these are Douthwaite⁷, Forestier³, and McPheeters⁸.

Douthwaite's work is based on a series of more than one thousand injections since his first published work in 1926. He has given more than two thousand injections, using neutral hydrochloride of quinine,* and a smaller number, using sodium salicylate and also glucose. He uses only 1 c.c. at the first injection. If no idiosyncrasy for quinine is present he uses a considerably larger quantity on the next occasion. Injections are given at intervals of about one week. He occasionally uses perivenous injections in severe cases. He claims that intravenous injections are usually painless and that recurrences do not take place.

He also states that sodium salicylate is more painful, and more liable to cause sloughing, if any of the solution escapes into the tissues. He quotes Meisen of Copenhagen as reporting several cases of ascending phlebitis when using this substance. He has not personally used

bimodide of mercury. He has used glucose but has not had satisfactory results with it. Phenol and iodine solutions are not recommended by him.

Douthwaite claims that the obliteration is due to the irritation of the endothelium of the veins, producing an instantaneous phlebitis, limited in extent, and followed by the deposition of fibrin, and later organization. He claims that no accidents are recorded as following the quinine-urethane solution. He gives the following definite contraindications as to the use of sclerosing injections: (1) pregnancy particularly in using quinine, (2) old-standing or recent phlebitis in deeper veins, (3) diseases of the heart, with signs of imperfect compensation.

Forestier reports more than four thousand injections. He has used mainly three solutions: (a) sodium salicylate in 20, 30 and 40 per cent strength; (b) red mercuric iodide; (c) quinine hydrochloride and urethane.

He claims that no fatal cases of pulmonary embolism have followed the use of any of these solutions, but states that two fatal cases have been reported following the use of concentrated solutions of sodium chloride or glucose. He admits the occasional occurrence of colitis with diarrhoea and hæmorrhage after the use of mercuric iodide. He has never had a case of sloughing following the use of sodium salicylate. He emphasizes, however, the importance of not allowing any solution to escape into the tissues. He mentions the following as contraindications: (1) old persons with enfeebled health, (2) extensive œdema of the lower limbs, (3) recent attacks of varicose phlebitis, as he thinks there is a liability to rekindle the infective process in the latter, (4) varices accompanying pregnancy, which, he thinks, are due not to pelvic pressure but to endocrine disturbance, (5) collateral varices at the junction of the limbs and trunk, where the flow is proximal rather than distal, as in the ordinary varicose vein.

McPheeters' work is based on a series of 180 injections in 31 cases. He claims that 20 per cent sodium chloride is superior to all other solutions. The use of novocaine solution to prevent pain is dangerous on account of the danger of shock when administered by the intravenous route. He condemns the use of mercuric iodide as dangerous. Glucose is objected to on the ground of its viscosity, necessitating the use of too large a needle, with increased danger of leakage into the tissues through the point of entry into the vein.

The efficiency of sodium salicylate he considers as great as that of any other solution. The sloughing reported following its use he considers as due to improper technique in injecting, and its toxic effects as due to idiosyncrasy of the patient.

* Quinine Hydrochloride (B.P.) 40 grm
Urethane 20 grm
Aq. Dest 30 c.c.

which can be guarded against by proper testing out, as with quinine

Various other solutions are referred to briefly. The technique of injection is strongly emphasized, the chief points being the necessity of being certain that the vein has been entered before injection, and the prevention of leakage from the vein into the tissues after withdrawal of the needle. Two fatal cases are reported, one from fat embolism and the second from mercurial poisoning. Apparently these are not the same cases that are referred to by Forestier.

In a later paper McPheeters⁹ claims that the injection treatment can be started at once in badly infected ulcers. He reports the use of salt solution for extensive cases, also of calcrose, sodium salicylate, and mercuric iodide in resistant cases.

In a still more recent paper, McPheeters and Rice¹⁰ have collected a series of cases illustrative of various untoward results. They report having found only seven deaths which can be attributed to the injection method, as having occurred in about 53,000 cases. Of these, four were from pulmonary embolism. Sodium chloride was used in two of these cases, in one of which invert sugar was used in the other leg at the same time. Pregl's solution was used in one case, and the solution employed in the fourth is not mentioned, nor is the date of death, which in the first three cases occurred on the 10th, 14th and 23rd days.

Of the other three fatal cases, one died from "septic thrombo-phlebitis." Another died on the 29th day from septicæmia, after the excision of a piece of gangrenous skin on the 7th day, with subsequent infection. While this death is definitely attributed to septicæmia the patient had complained of pain in the chest. No autopsy could be obtained. The third case died on the 12th day from mercurial poisoning; he had received two separate injections of 1 c.c. of 1 per cent mercuric iodide.

Three other deaths from pulmonary embolism are reported, although the evidence is not so conclusive as in the four mentioned above. One of these was treated with glucose. Six weeks later he was operated on for hæmorrhoids with an infected anal fissure. He died on the 5th day after operation. The second case died one month after the injection of sodium chloride. He had thrombosed hæmorrhoids and the embolus was attributed to these. The third case died one month after treatment with glucose. Sloughing of a superficial knot of veins occurred. These were excised, and the patient died ten days later from pulmonary embolism. One non-fatal case of embolism is reported.

ANALYSIS

An analysis of the cases reviewed by McPheeters and Rice would seem to indicate the following conclusions:

(1) Seven deaths are attributable to the injection treatment.

(2) Three additional deaths following the treatment were probably due to other causes.

(3) Eight cases of pulmonary embolism have occurred after the treatment. Of these (a) four cases were attributable to the treatment, (b) one was attributable to the treatment but was not fatal, (c) three cases were fatal, but were probably not caused by the injection treatment itself.

(4) There were two cases of infection which proved fatal, one with septic thrombo-phlebitis, and one from septicæmia.

(5) One died from mercurial poisoning.

These authors think that solutions for injection may be arranged in their order of effectiveness as follows: (1) mercuric chloride, (2) sodium chloride, (3) sodium salicylate, (4) invert sugar solution, (5) metaphen.

Their choice for every-day use is, however, in the following order, sodium chloride, invert sugar, sodium salicylate, mercury, metaphen.

They consider that injury and stimulation of the vein wall is the object of injection, and that solutions which are coagulants of the blood should not be used. They believe that all extensions of the thrombotic or sclerosing process which occur following injections are due to secondary infective phlebitis, and that the presence of a phlebitis is an absolute contraindication for injection. They emphasize the importance of a careful technique and a knowledge of possible complications.

TECHNIQUE

T. H. Treves Barber¹¹ gives the technique in detail. He emphasizes the following points: (1) Begin at the lowest point, (2) Use small, sharp needles, (3) Be sure that the needle is in the vein, (4) Inject towards the trunk, (5) Have the patient lying down as soon as it is certain that the vein is entered, (6) Stop the injection immediately if any stinging or burning pain occurs or if there is any swelling over the vein, (7) Apply pressure over the puncture in the vein to prevent leakage.

Barber uses 15 per cent sodium chloride exclusively. He injects 5 c.c. of sterile water if he suspects any leakage of the salt solution into the tissues.

CONCLUSIONS

1. The treatment of varicose veins by injection must now be regarded as a surgical procedure worthy of consideration in cases presenting no contraindications.

2. Treatment by this method does not as a rule necessitate hospitalization.

3. Treatment by this method, while sometimes uncomfortable, is not as a rule unusually painful, when careful technique is observed and proper solutions are used.

4. Immediately painful results, as well as later sloughing of the skin and constitutional disturbances, are probably most often due to (a) faulty technique, (b) use of too large an amount of solution, (c) improper choice of

solution, (d) idiosyncrasy of the patient to the solution used

5 Seven deaths, including four cases of pulmonary embolism, are reported in approximately 53,000 cases

6 Recent phlebitis is an absolute contra-indication

7 Excision of a gangrenous slough should not be considered lightly, and if the slough is infected it is an absolute contra-indication

8 Absolutely no operative interference with an infected ulcer is permissible during the treatment

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Association Notes

Re COLLECTION OF THE ANNUAL FEE

The following letter is being sent to all our members and calls for special attention

Dear Doctor,

During the past several years, the Association has received many suggestions from members living in various parts of Canada that our annual fee for the ensuing year be collected in the autumn rather than in the month of January

There are so many financial obligations falling due at the beginning of the New Year that medical collections in many parts of Canada are poorest at that time, and, conversely, money is more plentiful in the autumn and collections easier. Particularly is this said to be so in Western Canada. Moreover the early collection of the fee will eliminate the financial loss which is incurred in supplying *Journals* for a period of several months to members whose fees are in arrears

After very careful consideration at our last annual meeting, Council decided that the fee for the next calendar year should be collected during the months of October, November and December

We hope that all members of the Association will heartily concur in the change, and that the fee notices, when issued, will receive prompt attention

Yours faithfully,

(Signed) T C ROUTLEY,

General Secretary

Editorial

SLEEP

SLEEP, "the twin brother of death," is a natural phenomenon familiar to all. It is taken for granted, and, for that reason, probably arouses a very languid interest among the generality of people. Its opposite, insomnia, does have the effect of stimulating enquiry, however, and persons afflicted with this distressing trouble frequently consult the medical man, who, unfortunately, in regard to the physiological and pathological problems involved, is apt to be as ignorant as they are. For, strange as it may seem, the physiological state that we call sleep constitutes a problem by no means fully solved. The reason for this is that the subject has not attracted the attention it deserves, no great amount of experimental investigation has been carried out, what exists has been published at rather wide intervals, and has been inconclusive, not to say contradictory. The earlier work, that of Manacine¹ and Tarchanov² was done on puppies, and was followed by that of Sidis³ and Kleitmann⁴ with Lee⁵. Pieron⁶ and Pavloff used dogs. Bast, Loevenhart *et al*⁷ employed rabbits. The use of animals of different species and ages and of different methods to maintain the state of wakefulness makes it difficult to compare and accurately appraise the results.

The sleeping state is characterized by a number of familiar features which need only be mentioned to be admitted. The chief of these is the abolition of consciousness, and in this sleep resembles some other important conditions, such as, stupor, coma, catatonia and catalepsy, and syncope. Stupor and coma are conditions in which the patient can be brought back to consciousness partially and with difficulty, or not at all, waking from sleep is rapid and complete. In contradistinction to catatonia and catalepsy the muscles during sleep are in a flaccid state and the body responds quickly to stimuli. Syncope may be differentiated by its suddenness of onset, its fleeting nature, and the special circulatory phenomena.

But, besides the loss of consciousness in sleep, we have to note other features, the regular breathing, the quiet steady pulse, and the profound muscular relaxation. Under normal conditions a person goes to sleep fairly quickly, wakes up promptly after a sufficiency of rest, and during the sleeping period exhibits varying grades of response to external stimuli, depending on the character and intensity of those stimuli and the depth of the unconsciousness. At the same time certain of the bodily functions may be carried on, but on a lower plane of activity.

As all know, there are certain conditions that conduce to natural sleep, such as an accustomed hour, darkness, a well-ventilated room, a good bed, and *quietness*. Over-tiredness, mental activity, worry, an unsuitable posture, are all inhibitory. Sleep exemplifies very well the great law of periodicity as well as the law of habit. We go to bed at a certain hour every night, under favourable conditions, and with the definite intention of going to sleep. The oftener the attempt is made the easier is the end accomplished, so that in time a habit and a periodicity are established. Under the most favourable conditions sleep becomes automatic and inevitable.

Sleep has been interpreted in various ways. Rather fancifully, it has been held to connote a wish to return to the mother's womb, because the curled-up position of the normal sleeper resembles the fetal attitude. Actually, the flexion of the joints and the relaxation of the muscles are assumed because the position is the most restful, the least aggressive, so to speak, and may be seen in melancholics as well as sleepers. It is, appropriately, a negative rather than a positive thing, passive rather than active.

Sleep has been called a "death-wish." This view will not apply to the majority of people, it is certain.

It is an instinct, like the instinct that leads birds in the autumn to leave for warmer

climes As such, it can hardly be explained, unless on the basis of anticipation

It is a conditioned reflex, this on the authority of the great physiologist Pavloff Some words of explanation are required here

If food is shown to a hungry dog, immediately there is an outpouring of saliva This is a direct, or unconditioned, reflex But, if at the same time that the animal is fed a bell of a certain note is sounded the same result is obtained If this is repeated until an association of ideas is formed saliva will be secreted by the dog every time that particular bell is rung, even if food is not presented This is the conditioned reflex Pavloff found (1910-12) that, in the course of his investigations, it was difficult to keep the animals awake If the period between the action of the conditioning reflex and the giving of food was lengthened, the dog, concentrating his attention on the next event, would go to sleep, even if very hungry Furthermore, the constant recurrence of the conditioning stimulus, without food, would provoke sleep Pavloff assumes that the focussing of an excitation, in the case of natural sleep coming from the skin, on one area (motor) of the cerebral cortex causes inhibition of other areas Sleep, then, differs from other conditioned reflexes only in that there is a more extensive inhibition, affecting the whole cerebral cortex and even the sub-cortical centres There are, however, some observations that seem to indicate that this is not a sufficient explanation The development of conditioned reflexes requires the integrity of the cortex Yet, in decorticated animals more or less typical rhythmic sleep will occur The mechanism of sleep, then, is not entirely cortical, and does not depend altogether on generalized cortical inhibition

It is an auto-intoxication There is some experimental evidence in favour of this view For example, if an animal be kept awake a prolonged period its blood or cerebrospinal fluid, if injected into a second rested animal, will produce drowsiness in the recipient even if muscular fatigue and exhaustion are not operative in the donor The state of wakefulness, then, seems to lead to the formation of a toxin, which is different from the toxin of fatigue What this toxin is not known Examinations of the blood

during sleep have not revealed anything that seems of moment, except, possibly, that the concentration of calcium and potassium is lowered Much more evidence will have to be presented before this view can be accepted

Sufficient has been said to show that the problem of sleep is by no means a simple one Experimental investigation of the subject is fraught with special difficulties The only way to keep the experimental animals awake is by some form of muscular exercise Kleitman^s, one of the most recent workers, emphasizes that it is impossible to divorce experimental insomnia from muscular activity, and, for this reason, admits that his own results are of doubtful value And so are most of the other researches

One of the most plausible and widely accepted theories is that sleep is due to anæmia of the cerebral cortex One of the points in favour of this view is that we frequently become sleepy after a heavy meal (derivation of the blood to the alimentary tract) and that it is difficult for most people to sleep with the head low There is also the analogy between the unconsciousness of syncope and that of sleep Tarchanov (*loc cit*) found that the position of the head relative to the body was an important factor in inducing or preventing sleep in puppies Some puppies fell asleep more easily when the head was elevated above the general level of the body When the head was down it was impossible to make the animals fall asleep He also exposed the brain in his animals and noticed its condition both in the waking state and during sleep During sleep the brain is seen to be

at our last annual meeting, Council calendar year should be collected during November and December

of the Association will heartily concur in notices, when issued, will receive prompt

Yours faithfully,

(signed) T C ROUTLEY,

General Secretary

of the red blood corpuscles, sometimes a fall in the temperature of 4° to 5°C towards the end, and death in convulsions. In the fatal cases Manaceine, followed by Pieron, and by Bast, Loevenhart and their associates, have described definite changes in the cells of the central nervous system, but such were not observed by Kleitman, nor do those mentioned quite agree as to the distribution of these lesions. It is notoriously difficult, for reasons connected with technique, to be certain that structural changes that may be noted in the cells of the central nervous system are actual and of import and not merely artefacts. If the changes described are really degenerative this would point to a toxic element in insomnia.

One phenomenon seems to be quite definite, and that is, that during sleep the muscles become markedly relaxed, returning to tonus so soon as the animal awakes. Kleitman's experiments in putting puppies to sleep confirm those of Sidis. The latter found that there was a tendency for the animals to fall asleep when they were placed under conditions in which they could relax their musculature. Sidis emphasized also monotony and limitation of movement, but it is possible that these factors are only contributory, in that they tend to promote greater muscular relaxation. Kleitman concludes from the evidence available "that sleep comes from a decrease in the number of afferent impulses reaching the central nervous system from the sensorium, and that muscular relaxation, decreasing considerably the

number of proprioceptive impulses, constitutes the last stage of the process by which sleep is precipitated."

This, perhaps, does not get us much farther, except that surplus connotations are eliminated. It seems clear that sleep is a necessary factor in the maintenance of life, but it is also an interesting speculation to enquire how it originally came about. Perhaps primitive man, tired with the chase or warfare, sat down to rest. For security's sake he would choose a retired spot or a dark cave. The approach of night, quietness, and muscular relaxation, all contributed to the feeling of comfort. The toxin of fatigue would produce a numbing of the sensibilities, and a loss of consciousness. The oftener this was done, the easier would be the inducement of sleep, until the process became automatic and periodical. Eventually, the toxic element, in many instances at least, would pass into the background, and the element of suggestion would become more prominent. May it not be that sleep is, in the main, a matter of auto-suggestion?

A.G.N.

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NOISE

number of familiar features will be mentioned to be admitted. The one of these is the abolition of consciousness, and in this sleep resembles some other important conditions, such as, stupor, coma, catatonia and catalepsy, and syncope. Stupor and coma are conditions in which the patient can be brought back to consciousness partially and with difficulty, or not at all, waking from sleep is rapid and complete. In contradistinction to catatonia and catalepsy the muscles during sleep are in a flaccid state and the body responds quickly to stimuli. Syncope may be differentiated by its suddenness of onset, its fleeting nature, and the special circulatory phenomena

inevitable, and, for the majority of people, inescapable. In some sense it is a measure of our progress in civilization, it is also to some extent an indication of thoughtlessness or callousness. If one stands on the summit of Mount Royal, overlooking the city of Montreal, he is conscious of a steady rumble above the muffled roar of a mighty sea. The quality of this noise will vary somewhat at different times of the day, but most of it is due to automobiles, lorries, tram-cars, trains and other wheeled vehicles. There is an occasional flavour of bells, whistles, and sirens. The latest enormity is the gramophone

phone which belches its cacophony over the sidewalk. Fortunately its range is more limited. Bells, on account of their ancient and hallowed associations, are probably not distasteful to many people. We have the poet's authority that they are musical, and music, according to Samuel Johnson, is "the most bearable of all noises." The most insistent noises are those associated with tram-cars and motor vehicles, as most persistent. "Flat wheels," squeaky brakes, and squawky horns provoke many a shudder.

We may properly enquire how far noise is inimical to health. That it is so, under certain circumstances, is tacitly admitted when we put up signs on our streets—"Hospital Zone Quiet Please." Incidentally, it may be remarked in passing that the modern hospital, with its steel and concrete construction, is not the quietest place in the world. It is really a vast resonance chamber. Metal doors groan and bang, footfalls and voices re-echo along the corridors, telephones are continually ringing, and conversation can be heard through the partition walls. This should not be. Certainly, noise interferes with sleep, far more than we are apt to realize, and lack of sleep is injurious. In this jazz age, with its high pressure performances both at work and play, its scandalous hours, and dietetic extravagances there can be little doubt that the nervous system is being maltreated. Add to this the influence of continual noise and in time "frayed nerves" will become general. It will be interesting to see what the effect of all this will be in the future on the production of psychoses and insanity. It is fortunate that there is a counterpoise to the insult of noise. When a stimulus is continuous or frequently repeated the recipient nervous mechanism becomes callous, it does not "register." This may be illustrated by the common experience with the clock. So long as a clock is going we do not hear it, but, if it stops we immediately become conscious of the fact. We have here a protective mechanism. Still, it may be doubted whether this protection is adequate. Influences that we are unaware of may yet be harmful, given sufficient time for their operation. Continual dropping wears away a stone. While it is difficult to advance concrete proofs on the matter there is little doubt in

the minds of medical men that the constant concentrated noise of our big cities is harmful. Authorities on nervous diseases have expressed themselves in this sense, notably, Sir Robert Armstrong-Jones.

What can be done about it? The measures, to be adopted will, naturally, vary in different places, according to local conditions. In Great Britain the profession through its great organ, the British Medical Association, has taken the first steps to bring about an improvement in the state of affairs. At the Annual Representative Meeting of the Association held at Cardiff a resolution was adopted calling for measures to be taken for the suppression of unnecessary noise in the interests of public health. The Medico-Political Committee, at a recent meeting, decided to take prompt action in pursuance of the resolution referred to. The Ministry of Health has been asked to receive a deputation and local branches of the Association will be urged to approach their local authorities both to make use of existing powers to deal with the nuisance and, when necessary, to apply for new ones. A conference has already been held at the Home Office between the Secretary of State, the Minister of Transport, and the heads of both departments. One of their conclusions is that "the increase in the volume of noise is largely due to the increase of motors, and of the uses to which motors are put, and to the abuse of various types of horns." It has been decided to draft regulations directed to abating the nuisance of motor traffic noise. Paris, which a few years ago, in certain thoroughfares, with its ramshackle cars, its cobble stones, and the incessant tooting of horns, was little short of an inferno, has taken recently a great step in advance. Motor horns may not now be used there between certain hours of the night. Other places might well follow their example. It is to be remembered, also, that noise is only one part of the question. Vibration, which is chiefly caused by trams and heavy drays, also enters into it.

When all is said, it would seem that the most important single factor is *speed*. Excessive speed increases the grind of the machinery, and the amount of vibration, necessitates the more frequent application of the brakes, and leads to greater blowing

of the horn And, it is just this factor of speed that is notoriously the most difficult to control To effect the necessary reforms

will require the active interference and co-operation of automobile associations and municipalities
A.G.N

PROGRESS IN MEDICINE

WE not only pride ourselves upon living in the most progressive period of the world's history, but sometimes are inclined to be boastful of this our good fortune

Few will take exception to the claim that science in general, and medicine in particular, has made as much progress during the last fifty years as during the whole previous history of mankind Some of our more enthusiastic members claim that the major part of medical progress has been made within the last quarter of a century It may be that even the latter assertion is within the range of fact

We are perhaps too much inclined to forget that active advance in medicine did not begin until within comparatively recent years We, of course, do not imply that great credit is not due to Hippocrates and others of the old Greeks who untrammelled medicine from the traditions and superstitions of the pagan priesthood, and who made it clear that there are no supernatural causes of disease Even after giving due credit to the old masters and to such schools as those at Alexandria and Salernum, and to the part played by Arabian physicians in the preservation of Greek teaching and the addition of a few new drugs, we are compelled to admit that medicine remained in a practically stagnant condition until Vesalius gave to the world the important facts about the anatomy of the human body It may help our orientation by remembering that this demonstration did not take place until some time after the discovery of America, which is not a remote date in history Nevertheless, except for the contemporaneous brilliancy of Paré in surgery, and the unique eccentricities of Paracelsus in general medicine, we can attribute little progress even to this period Enterprising Europeans had been exchanging glass beads or equally valueless trinkets for the valuable silver and gold ornaments of the original inhabitants of this Western hemisphere for nearly half a century before Vesalius began to attract

medical students to his classes at Padua, and Linacre, perhaps the greatest of medical humanists, to herald the revival of learning in England The stimulus of Vesalius, great though it was, was not sufficient to create that spirit of investigation which alone could establish medicine on a firm foundation Not until Harvey set forth his views on the circulation and supported them with his well-considered experiments did medicine really enter upon the path that led to progress The discovery of the circulation was the most momentous event in the history of medicine Harvey's methods at once excited the admiration of many, and with his work we may say the experimental method in medicine really began This was in the year 1628

Harvey and Malpighi proved the circulation to be a physical process, but threw no light upon the chemical processes, which even then were considered to be of very great importance It was really not until the eighteenth century was well advanced that scientists acquired definite knowledge about oxygen, nitrogen, and carbon dioxide, and that the understanding of respiration became possible

These discoveries in chemistry were made during the "Hunterian period," and this year marks the bicentenary of John Hunter's birth Hunter's contributions to medicine are very generally known, and we speak of him still as one of the three greatest surgeons of all time It is difficult, however, for us to realize that it is only a century and a half since John Hunter was recognized as a man of unusual qualities During the span of his lifetime, nevertheless, many most notable advances were made in medicine and the allied sciences The list of his prominent contemporaries in various fields of activity is a long one Sir Isaac Newton died only in the year preceding John Hunter's birth Linnæus and Boerhaave died when he was but a lad During the active years of his life, Albrecht von Haller, Stephen Hales,

Luigi Galvani, Giovanni Moiragani and Huxham investigated the problems of physiology, Lavoisier and Priestley developed our knowledge of chemistry, and Lettsom, Smellie, Mead, Cullen, Haygarth, Cheselden and Jenner were advancing our knowledge of clinical medicine

When we realize that these notable physicians and investigators lived within such a

short period of our own era we are impressed with the fact that little advance was made in medicine during the previous ages, and that comparisons of the headway made during the past few decades can be made only with that of the past two centuries rather than with that of earlier times

W H HATTE

Editorial Comments

THE STERILIZATION OF MENTAL DEFECTIVES

At the last annual meeting of the American Medical Association an interesting commentary on the present position of sterilization in the United States was given by means of a special exhibit consisting largely of a series of maps and graphs. One of these was a map of the United States showing what legislation existed in each state. Considerable variation was evident. In some states there had been no legislative action, in others action had been taken and had then been found to be unconstitutional, while others still awaited the results of legal tests, in some the law seemed to be functioning satisfactorily, in some operative sterilization was made compulsory, in others it was voluntary. Two charts tabulated the states, showing the order in which the first sterilization statute was passed, what classes of individuals were subject to sterilization, and the agencies which had the authority to make the decision to sterilize.

One graph was devoted to the increase in population of institutions for mentally diseased since 1850, and of the mentally defective since 1904. An attempt was made in another chart to summarize the effect of sterilization of the insane and feeble-minded on race betterment on the morality of the neighbourhood, and on the individual himself. Other maps showed the number and cost per capita of patients in hospitals for mental disease and mental defectives, and the institutions in California in which the insane or feeble-minded were sterilized. Finally, there was a list of the operations which induce sterilization, with or without unsexing.

The data for this exhibit were taken chiefly from a book entitled "Eugenical Sterilization, 1926," by Dr H H Laughlin, but also included information gathered from reports of the United States Census.

The surgical aspect of the subject has been dealt with by Dr Dickinson in a paper entitled "The surgery of the insane and feeble-minded in California." In this he commented on the necessity of emphasizing the fact that steriliza-

tion did not involve the removal of any organ or the lessening of sex feeling, and referred to the amount of theorizing on the subject which had appeared in the press, in comparison with the collection of facts on the subject. He closed his paper with proposing a resolution that the Section of Obstetrics, Gynecology and Abdominal Surgery recommend to the American Medical Association that it organize or take part in an impartial and thorough investigation of sterilization from the point of view of medicine, surgery and preventive medicine.

The comment made on the subject by the Board of Trustees of the American Medical Association is worthy of note*. They recognize that the interest in legislation for sterilization is widespread, but the medical profession has not given the subject the study it deserves. "If legislation authorizing the asexualization of certain classes in the community does not accomplish the results that its proponents promise, the medical profession may have to assume its share of the responsibility, even though it has done nothing but stand idly by while the legislatures have acted. It seems timely to undertake a study of the field of eugenic sterilization asexualization now, so that the policy of the Association may be wisely determined."

H.E.M.

THE USE OF EPHEDRINE

Ephedrine is an alkaloid whose value in controlling attacks of hay fever or asthma is now fairly well established. It is not a specific remedy for these conditions any more than the very numerous therapeutic measures which in their turn have given relief. It does however most nearly approach that remedy which of all others generally used has the most rapid and beneficial effect, although short in duration, that is, epinephrin hydrochloride given hypodermically. But ephedrine possesses the not inconsiderable advantage of being effective when given by mouth, and when it does give

* *J Am M Ass*, 1928, xc, 1462

relief it does so for a longer period of time Ephedrine therefore commends itself rather highly in the relief of asthma

There are contra-indications to its use, however, which should be carefully pointed out These depend on the fact that its action is chiefly that of stimulating the sympathetic nervous system, thus causing acceleration of the heart action, along with which there is a temporary rise of the blood pressure Toxic doses will cause a fall in blood pressure and a depressor effect on heart muscle

The contra-indications to the use of ephedrine will therefore be mainly the presence of cardiac disease or of a high blood pressure, and it is important to insist upon this A case has been recently reported* of a patient with a history of hay fever who suddenly developed an acute attack of what was diagnosed as asthma He was given a prescription for ephedrine and within a space of 20 days took a total of 15 grams He then came under the observation of Drs Bloedon and Dickens who found him in a condition of cardiac decompensation with a dilated heart, and a right-sided effusion. They attributed this condition to the effects of the ephedrine, and the large quantity taken was probably enough to give rise to serious results There appear, however, to have been symptoms of cardiac disease beforehand

The case is instructive in emphasizing the dangers of an indiscriminating use of ephedrine Asthma is such a common disorder that no care is too great in enforcing caution in the prescribing of drugs which the patients can obtain for themselves Incidentally it may be remarked that ephedrine is now recognized to have very little value in asthma due to infective processes and in so-called "cardiac asthma" H.E.M.

THE RABIES SITUATION

A short account of the situation regarding rabies in Ontario was given in our July number (p 78) by Dr W D Hay, and reference was also made in the same issue to the review by Drs Rice and Beatty† of the prevalence of rabies in the United States

At that time no case of fatal human rabies in the present epidemic had been reported in Ontario, but we have now received details of one such case in the *Public Health Journal* (September, 1928, xix, 421), reported by Dr F Adams This was a little girl, aged four, who on or about the first of June of this year while playing with a cat was scratched and bitten on the left temple The wound was treated with iodine and no special attention was given to

the incident About two months later the child developed signs of involvement of the central nervous system and died five days later with well marked symptoms of rabies The post-mortem examination fully confirmed the diagnosis, the brain showed the microscopic changes typical of rabies and rabbits inoculated with the brain tissue developed the disease

Dr Adams points out that the local press had given much publicity to the subject of rabies and had described the transmission of the disease and the precautions it called for Attention, however, had been focussed largely on the transmission of rabies by dog bites, although a case of a rabid cat had occurred in June in Ontario, and three in Detroit

The case is worthy of note as emphasizing the difficulty in controlling the spread of rabies, a difficulty which is unusually great in the neighbourhood of the border cities in Ontario Detroit in particular labours under the disadvantage of exceedingly rapid growth, and its population is of many racial origins, more than fifty per cent have a mother tongue other than English The incidence of rabies in Detroit, is rapidly increasing in 1921 there were 30 cases amongst dogs, in 1927 there were 265, and in the first five months of 1928 there were 302 H.E.M.

THE MONTREAL HEALTH SURVEY

A special article summarizing the Report of the Montreal Health Survey appears in this issue It is noteworthy that all the newspapers of Montreal (French and English) carried the summary prepared for press release the last Saturday in September As long as prominent laymen, who accept professional guidance, continue to take interest in health work, we may rest assured that progress in this field is certain

This survey presents to Montreal a three-year program for health services, which is based upon accepted standards of health work as adapted to local needs The survey, which covers the country's largest metropolitan centre, will be of interest to all Canada It will also interest all communities, and may prompt them to enquire if such a survey might not be helpful in their own group One might ask whether or not it would be advisable for the Canadian Medical Association to consider the provision of a technical field health survey staff which would be capable of making such surveys or of acting as consultants in that capacity The medical profession is vitally interested in any program of health services presented to a community, and it may be that there is opening a field of national service which the organized profession should enter

* *Arch Int Med*, 1928, xlii, 322

† *Am J Pub Health*, 1928, xviii, 421

THE OSLER LIBRARY

In a letter received lately from Dr W W Francis, who has charge of the cataloguing of the Osler Library, we are informed that every effort is being made to have the library packed and sent to Montreal before navigation closes. It is doubtful however, whether the catalogue which has already reached a volume of large dimensions will be through the press and ready for issue much before the end of the year. The annotations number nearly 8,000, and many of them have been written by Sir William Osler himself, and are his own comment on the book or on the writer.

In this catalogue we are informed the following groupings have been made. The FIRST SECTION includes all volumes either by or about the great innovators in science, including medicine in that term. The names in this group were decided upon by Sir William himself, but at the time of his death he was far from having obtained all the books in this section which he was anxious to have. Some sections are almost complete, such as the works of Vesalius, and of Harvey, and works on the introduction of anaesthesia. In other sections he failed, chiefly through his desire to obtain first editions. The SECOND SECTION is an alphabetical catalogue of the scientific works, for the most part medical, of writers who can hardly be regarded as holding the first rank. The THIRD SECTION contains the literary works of physicians and the quasi-medical writings of laymen, such as Burton's *Anatomy of Melancholy*. This section includes a very complete collection of the works of Sir Thomas Browne and the more important writings of Rabelais and of writers of his school of thought. The FOURTH SECTION is of an historical character and comprises works on the history of medical science and brief modern essays in special subjects with an historical character. The FIFTH SECTION contains biographies, many of which were given by Dr Adam from his collection. The SIXTH SECTION contains works on the bibliography of medicine and science generally.

The SEVENTH deals with incubula, and contains about one hundred and thirty-five fifteenth century works, not all medical. Many of these are very rare, and every year they are becoming more and more difficult to secure.

The EIGHTH SECTION is a collection of manuscripts, one of them is a Babylonian tablet on medicine dated about 500 B C. There are also a few mediæval manuscripts, but most of them are of more recent date.

The library contains about 7500 volumes, and the selection of its books was made by Sir William with an eye to their educational value.

The first section especially was brought together with the view of giving to the student a clear idea of the successive steps by which advancement was made in our knowledge.

A NINTH SECTION has been added containing many donations since Sir William Osler's death and includes a list of about 150 Oriental books and manuscripts presented to the library by Dr Casey Wood. A D B

NO 3 CANADIAN GENERAL HOSPITAL

The announcement is made that about the third week of November there will be published the official history of No 3 Canadian General Hospital (McGill), covering the work of the unit from the time of its inception under Col H S Birkett in the autumn of 1914 until its return to Canada in July, 1919.

The book which has been edited and compiled by Mr R C Fetherstonhaugh, historian of the 13th Battalion, Royal Highlanders of Canada and of the Royal Montreal Regiment, 14th Battalion, CEF, and has been checked by the Historical Section of the General Staff, Ottawa, will contain a foreword from His Royal Highness the Duke of Connaught, and will include twenty-one chapters of text, thirty-five full-page illustrations, and appendices giving the roll of honour, the nominal roll of the original unit, and the nominal roll of the reinforcements.

The story is written so as to include both the military and medical aspects of the Hospital and recounts many details of the work accomplished by the physicians and surgeons under Col Birkett, the late Col J M Elder, the late Col John McRae and those who succeeded them. The book will be printed on laid paper in large clear type and will be issued in cloth-bound and de luxe editions selling at \$5.00 and \$10.00 respectively. The editions which are limited in number may be obtained through the distributors—Burtons Limited, 597 St Catherine St W, Montreal.

R C FETHERSTONHAUGH

THE EDITOR

The friends of Dr A D Blackader, the senior editor of the *Journal*, and they are many throughout the length and breadth of Canada, will regret to hear of his recent serious illness. At the time of writing he was still confined to the house but we are pleased to be able to announce that he is well on the way to convalescence. All who know him, including his colleagues on the editorial staff, will join in the hope that he will soon be restored to his accustomed health and vigour. A G N

Special Articles

THE EVOLUTION OF CLINICAL MEDICINE AND SURGERY IN RELATION TO THE PRESERVATION OF HEALTH AND LIFE*

BY FRANKLIN H. MARTIN, M.D.

Chicago

After thanking the American College of Surgeons for the honour done him in electing him President, Dr. Martin said that in his address he would attempt to portray the present evolution of the art and science of medicine, and the part that our profession and the public should have in guiding its successful progress.

Those who visualized the American College of Surgeons, organized it, and have been responsible for its administration, realized from its inception that just to organize another surgical association, just one more academic society, was not a reason to warrant its creation. The College, to justify its existence, would have to assume the responsibility of building for broader science, for more worthy practice, for interest in sustaining the traditions of the greatest profession, and by the example of its Fellows and through open discussion, impress upon the public the significance of scientific medicine as the one authority qualified to maintain the health, and insure the wholesome living of all people.

It was a bold announcement—the declaration by the Founders of the College at its inception.

Among the learned professions, medicine has no equal in longevity, in continuity, in ideality, in disinterested service, and in accomplishments. For twenty-five centuries, medicine exhibits a clear history. Its spiritual and moral creed—the Hippocratic Oath—announced at that early beginning, has been and is as fundamental in the guidance of the true physician as the Sermon on the Mount (first uttered five hundred years later) in the guidance of the true Christian. Spiritually, morally, and scientifically, in all civilized countries scientific medicine is outstandingly the recognized authority in the prevention and cure of disease. Like the great religions of the world, it recognizes no geographical bounds, but, unlike the great religions, it has no division of authority.

A recital of the long chain of distinguished men of medicine, with many links centuries long, reveals an unmistakable continuity. To mention them individually, is to count the beads of a great rosary, one by one, each bead a jewel of rare worth and beauty. It is a record of singular interest. Every physician is assumed to have a knowledge of this history, but he should know it accurately, and for protective information the

cultural education of each person—man, woman, and child—should include facts of medical history.

For centuries the art of medicine was paramount. This art was based on records which represented careful study of diseases, the effect of drugs, and the performance of operations in dire emergencies only. Familiarity with the action of drugs was discovered and developed to an astonishing degree of exactness, and the proficiency with which the experienced practitioner influenced the different shades of diseases would excite the admiration of the skilled practitioner of our present ultra-scientific age. Like a master musician, the physician of yesterday studied and knew his organ, and no note was too subtle for him to reproduce.

The nineteenth century saw the development of the pure sciences. Rapidly these were absorbed by the medical profession, and now more than ever we may say that we practice the science as well as the art of medicine. Long experience in recorded observation is not the only basis of our accomplishments, but as well the mathematical certainties of pure science and its instruments of precision.

First and foremost are the scientific accomplishments that have definitely modified and controlled specific diseases, and incontrovertibly conserved life and health in a revolutionary manner: the work of Pasteur, and its adoption by Lister in the development of antiseptic surgery, the outstanding pursuits of Koch in modifying tuberculosis, the epoch-making researches by Behring, Roux, and Klebs in controlling diphtheria, the indefatigable labours of Ehrlich in furnishing a remedy for the spirochætal diseases, the achievements of Roentgen, of Eberth in well-nigh exterminating typhoid fever, the painstaking accomplishments of Bruce in sleeping sickness, Ross and Laveran in malaria, our own Reed, Finlay, and Gorgas in yellow fever, Banting in diabetes, and the Dicks in scarlet fever. These specific accomplishments have resulted in saving more lives each year than were lost in the Great War.

There are certain other diseases that reap a large death harvest and a much greater disability. Though we have not a specific for each, we have definite proof that they may be modified or cured if discovered early. These include the degenerative diseases, insidiously begun in middle life and exaggerated in old age, notable among them, cancer, with a mortality of 115 in every 1,000 deaths, though if recognized early it may be cured, heart disease, that makes its deadly swath in individuals in the most productive period of life, 185 to every 1,000 deaths, may be modified if early recognized and appropriately treated, diseases of the kidneys and blood vessels, with their harvest in middle life of 110 in 1,000 deaths.

* Presidential Address (abridged) delivered before the American College of Surgeons, Boston, October 8, 1928.

Preventive medicine, or the early application of curative measures in these diseases, would save thousands of lives each year

So to extend longevity to any material degree, we must first discover the cause of, and secure a remedy for, degenerative diseases

The degenerative diseases cause one-third of our deaths. They are definitely influenced by concurrent incidents, as habits of living, strenuous mental activities, improper diet, excessive use of stimulants, particularly alcohol, lack of proper exercise and recreation, and infectious diseases that thrive on a weakened resistance. They are the result of age or its equivalent—excessive work

The science of chemistry, endocrinology, biology, physiology, clinical pathology, and basic metabolism, is tackling and solving new problems every day. Adrenalin, thyroxin, insulin, and pituitrin are examples of exact and progressive accomplishments. Undoubtedly the substances that will control the degenerative diseases are now in the making

Scientists today are mining the materials, men of vision are fitting these materials into practicable theories, and practical men are straining at their leashes ready to utilize these materials and make great visions come true

PUBLIC HEALTH

We know to a mathematical certainty the contributions of scientific medicine toward public health in comprehensive hygienic regulations and general sanitation. The findings of scientific medicine, through civic and other governmental authority, are applied to purify the water supply, to dispose of sewage, to protect and conserve the purity of food, to ventilate public buildings and places of amusement—gifts which the lay public has accepted almost unanimously, and all civilized countries realize the extent to which life is protected and wholesome living insured through the provisions of scientific medicine

Ours is an unique heritage from a most ancient and accomplished profession. Are we, as trustees, doing our utmost to perpetuate and extend these doctrines? Is the public unmindful of its legacy through ignorance, indifference, or false teaching? Whose is the paramount responsibility to supplant ignorance with knowledge, indifference with interest, and false teaching with truth? The practitioners of medicine themselves!!

In this review I have endeavoured to ascertain what would be the result if the doctrines of scientific medicine were applied in a maximum degree toward the conservation and preservation of personal health, and toward the alleviation and cure of existing disease. It must be obvious that the effect in prolonging life would be phenomenal, and in extending wholesomeness of living, and happiness in pursuit of life, inestimable. Our past and present methods have confined our activities to curative medicine, almost to the exclusion of preventive medicine

Though it be impossible to speak with exact-

ness, it is a safe assumption that of the 130,000,000 people in the United States and Canada, one-half of those of reasoning age have no familiarity with the simplest fundamentals of the laws of health. While this proportion of our population is ignorant of the importance of health laws, it is again a safe assumption that false teachings by propagandists, and one or another reasons have led at least another one-fourth of our reasoning population to develop a positive antagonism to scientific medicine, and definite resistance to its services. Those who oppose scientific medicine thrive more or less successfully according to the advertising zeal of their leaders, they represent the various sects, cults, and organizations of proprietary and patent medicines

If it is true that one-fourth of our population of reasoning age represents active opposition to curative medicine, and succeeds in avoiding its ministrations, here is a sound basis on which to estimate the effect of this on the health and mortality of the whole population

Thus our favourable showing is possible with non-resistance or indifference of one-half of the population of thinking age. Estimating that one of every four resisted the services of scientific medicine—refused vaccination for smallpox, antitoxin for diphtheria, and appropriate prophylaxis in the other preventable diseases—a large proportion of the present death rate in these diseases is avoidable and may be attributed to this resistance. An ultra-conservative estimate (under accepted methods of statistical study and mathematical calculations) will attribute to this one sin of omission 8,790 6 avoidable deaths in 1925, and 87,906 avoidable deaths in the ten years, 1915 to 1925

The remedy is obvious. There must be continuous education. The fundamentals of scientific medicine, its practicability and acceptability, should be taught in the primary classes of our public and private schools, as early as the seventh or eighth grades. The fundamental principles of scientific medicine should occupy the same relative position of importance in the grade schools as grammar, general and physical geography, lower mathematics and English literature. The influence of these principles on personal and public health should be emphasized and reiterated, and knowledge imparted of the laws of general hygiene and sanitation

A number of experiences in addressing school children convince me that education in the basic principles of scientific medicine would be accepted by them with great enthusiasm, and the heaven there sown would be of incalculable aid in lessening the existing ignorance and indifference toward the maintenance and promotion of better health. Moreover, in a dignified and proper manner it would be a potent factor in combating misinformation, which, uncurbed, develops into opposition to the truths of scientific medicine

Preventive medicine and its counterpart, periodic health examinations, have been discussed since the earliest days of medical science. If

scientific medicine has established its right to assume the responsibility of supervising and maintaining the health of the people, it is a foregone conclusion that it should examine each and every individual at definite intervals, and give advice based on the findings

Practical work along this line has been enthusiastically developed by the Metropolitan Life Insurance Company. Special semi-public organizations, conspicuously the National Tuberculosis Association and the American Society for the Control of Cancer, the former twenty-four years ago, the latter sixteen years ago, began to urge periodic health examinations so that the signs of the respective disease in which they were interested might be discovered early, and later their example was followed by the American Child Health Association, the American Social Hygiene Association, the American Heart Association, *et cetera*. Naturally it soon became obvious that preventive medicine could be more systematically advanced if the public were educated to accept a comprehensive periodic examination that would reveal the early sign of any disease instead of some particular disease.

The Great War emphasized the wisdom of thorough physical examinations, as every country which entered the conflict arbitrarily exacted a medical examination of its soldiers.

The medical corps of the Army, under General Gorgas, alone accepted for service, medically, 4,500,000 of fit men, and to secure this number it was necessary to examine approximately 7,000,000 young men. The difference in these figures represents those who were unfit.

These demonstrations with examinations for special diseases, gave great impetus to the propaganda in favour of all-round periodic examinations. In 1919 and 1920 this organization, the American College of Surgeons, organized its sectional meetings, since which time we have held sessions in practically every state of the United States, and every province of Canada. The principal innovation is the carefully planned meeting for the laity at which, in simple language, the layman and woman are given information on the fundamentals of scientific medicine, and especially the advantage of periodic health examinations. The Gorgas Memorial Institute of Tropical and Preventive Medicine was organized in 1921. As the activities of the Memorial have developed, it has more and more urged upon the public the importance of seeking an annual health audit by the family physician.

EDUCATED PILOTS

The public should know what we know—that in a large number of our states, individuals are licensed to practice the healing art who are utterly ignorant even of the barest fundamentals of scientific medicine, cultists, some of whom have not even a rudimentary knowledge of the basic sciences, of anatomy, physiology, chemistry, bacteriology, pathology, diagnosis, or the other primary essentials of a medical education,

cultists, some of whom utterly ignore or denounce the necessity of possessing any knowledge whatsoever of these indispensable requirements. The various cults, under sundry names, have gained the sympathy of legislatures. By subtle sophistry, they have passed laws which require farcical examinations in one or another pathy or cult, authorized license to practice medicine or even surgery, and have caused them to be recognized as legal practitioners of the healing art, with all of the rights and privileges of the scientifically educated physician.

Of the forty-eight medical practice acts authorized by the individual states of the United States, only four require that an individual, to be licensed to practice the healing art, shall show by examination that he has a knowledge of the basic sciences upon which, obviously, the practice of the healing art should be grounded. This means that in the other forty-four states of the United States not requiring the basic science examination, only the graduates in scientific medicine meet these qualifications.

The basic science law requires that every practitioner of the healing art shall pass successfully an examination in the basic sciences before he is eligible to present himself as a candidate to the state board of examiners for a license to practice medicine or the healing art in any form recognized in the medical practice act of the respective state. The first section of the "Enacting Clause" reads

BASIC SCIENCE CERTIFICATE REQUIRED No person shall be eligible for examination or permitted to take an examination for a license to practice the healing art or any branch thereof, or granted any such license, unless he has presented to the licensing board or officer empowered to issue such a license, a certificate of ability in anatomy, physiology, chemistry, bacteriology, pathology, diagnosis and hygiene (hereinafter referred to as the basic sciences), issued by the state board of examiners in the basic sciences.

In obtaining thorough health examinations, how can we insure the independence of the family doctor, the personal internist, and the favourite surgeon? How insist upon a thorough and complete health audit, save the public from the exploitation of unworthy groups, stock companies, or even the well organized clinics or well equipped dispensaries or hospitals, and yet not lose to the personal physician his control of his own legitimate clientele? On this point even the exponents of the health audit have been most apprehensive, and their consternation has led them almost to the point of abandoning the program, lest in spite of its advantages the independent practitioner be put out of business.

The American College of Surgeons is successfully working out a remedy, a supremely practical solution of the problem, that will be satisfactory equally to the laity, the independent practitioner, public health officials, and the hospitals. Obviously, the difficulty lies in the fact that no one practitioner, regardless of ability and eminence, can individually overcome the prohibitive diffi-

culties and make a complete health audit, unless he has at his command competent aids, and intricate scientific apparatus and laboratories

Where is the environment that will remedy this difficulty? Well organized groups, organized clinics, *the standardized hospitals*

THE HEALTH INVENTORIUM

The "Health Inventorium" is planned by the College to meet this exigency. The suggested plan was submitted to one-tenth of the 1,805 hospitals in the United States and Canada on the approved list of the College in 1927. Almost without exception the plan was accepted. Thereupon, the plan was submitted to all hospitals on our approved list in 1927, and finally there is a thorough discussion of the subject at our hospital conference during this session of the Clinical Congress. The fundamentals of the plan have met with almost unanimous approval.

The detailed plan can be summarized but briefly here. It is as follows:

- 1 Every standardized hospital shall furnish an examining room or rooms, to which any legalized practitioner, who is a member in good standing of his respective county medical society and the American Medical Association, may bring a patient for examination. There shall be no charge for the examining room.

- 2 The hospital shall furnish to the practitioner every facility in the way of aids, consultants when necessary, laboratory tests, etc., as will insure a comprehensive audit of his patient's condition.

- 3 The charge for the required laboratory tests shall be nominal, and a maximum of actual cost.

- 4 The physician shall render to the patient a bill covering his fee for the examination, and where there is a charge for laboratory services, he shall be responsible to the hospital for its payment.

- 5 No hospital shall accord these facilities to any individual who is not accompanied by his or her doctor, or who does not carry a letter from his or her doctor in which certain services are requested.

- 6 An individual who applies for an examination and who has no physician should be referred to a duly appointed, disinterested committee consisting of a representative or representatives of the county medical society and the standardized hospitals of the community, and this committee shall advise the patient in the selection of a physician.

- 7 Except in dire emergency, no hospital shall treat a patient who was examined in the Health Inventorium, except by request or consultation with the referring physician.

THE DEMAND FOR HEALTH EXAMINATION AND ITS ACCEPTANCE

It is not surprising that life insurance companies should advocate and be ready to lend financial support toward popularizing periodic

health examinations. This commendation only emphasizes their importance. They recognize the movement as a substantial business asset, as it will extend the life of their policy holders, reduce the cost of insurance, and incidentally substantially increase profits. Are not these facts, substantiated by business sagacity, evidence that you and I, as policy holders, too, will profit in longer life and better health?

The approximate increase in demand for periodic health examinations with companies which give figures for 1920 and 1927, ranges from the encouraging figures of 549.5 per cent to 3,867 per cent.

Considering the short time occupied in the experiment, this is a showing that demonstrates a substantial interest by the people. Notwithstanding a reluctance on the part of not a few policy holders to accept the service on the ground that it is not an entirely disinterested activity, it is a movement that will develop incalculable health conservation.

Our College has been asked by a number of the important indemnity companies and industries who must provide protection to their employes to make a survey that will assist them to give the highest degree of protection to the employed in industry. As a result, through our Board on Traumatic Surgery, we made careful inquiry into the protective measures and health care that are provided to the great number of employes in large corporations.

While indemnity companies and state laws furnish protection to men who labour in the industries, in the last analysis, such indemnity protection is financed by the industries themselves. Wisdom and efficiency have led a considerable number of the larger corporations who employ labour to adopt methods of self-protection by furnishing to their men every facility that scientific medicine offers in the way of preventive and curative health measures, and similar facilities are provided also to their entire administrative force. The beneficent effect of this system in preserving health and furnishing the best surgical and medical aid in case of injury or illness is not of less importance because it results in a financial saving to the industries which furnish the aid, but it is the most substantial and effective commendation of scientific medicine and its relation to personal health.

Our survey indicates that this form of humanitarian service has increased enormously since 1920.

Labour has not been slow to recognize the importance of this movement. Samuel Gompers, outstanding statesman of labour, during his lifetime earnestly and continuously urged his great army of followers to ally themselves with scientific medicine. His worthy successor, William Green, the present President of the American Federation of Labour, is backing the program of our College to improve the status of industrial surgery and medicine. There is no power greater than organized labour to influence the advance-

ment and extension of scientific medicine. Following the demonstration of the care of men in industry, especially in the production of munitions and other materials for warfare, the average increase in yearly health audits among labour men, based on our survey, is approximately 95 per cent since 1920. This favourable showing is possible because most of the industries surveyed had similar service in 1920.

As early as 1905, Theodore Roosevelt, with his alert mind, looked with appreciative vision upon this problem of keeping physically fit, and, characteristically, he acted. Why have weak links in the United States Army, Navy, Marine Corps, and Public Health Service when by proper medical supervision the unfit units could be weeded out? From that time to the present the United States soldiers, sailors and marines have been submitted to regular physical examinations. The benefits of that program are now extended to the members of their families. By this regulation alone, over one million citizens are examined yearly and receive the benefits of preventive medicine.

In the last ten years, in my travels and talks at sectional meetings of the American College of Surgeons, I have found well organized educational departments in practically every state of the United States and every Province of Canada. With few exceptions primary schools, and authorities in higher education, are careful to note the physical well-being of pupils. It is an exception if the authorities do not insist upon vaccination against smallpox, examination of the throat, tonsils, hearing, and eyesight.

Our survey, done by questionnaire, which covers the health activities of the health authorities of eight cities of the United States having a population of not less than 250,000 each, may be summarized thus:

We have discovered that there is a growing interest in periodic health audits on the part of apparently healthy laymen, women, and children. We have learned our profession's wholesome interest in this subject.

With better facilities furnished to the general practitioner, through our Health Inventorium, and the increased demand for periodic health examinations on the part of the public, this preventive measure for conserving health and life will make notable progress in the next few years. Briefly, we note that there has been an increase, between the years 1920 to 1928, on a conservative estimate of reports, of approximately 1 to 1,000 per cent in examinations of apparently healthy individuals, that of the individuals examined, who were apparently well, from 1 to 100 per cent were harbouring unsuspected disease.

CURABILITY OF THE DEGENERATIVE DISEASES

The diseases of middle life and advancing age, already referred to, are now attracting the attention of scientific medicine. What are they? At what age do they manifest themselves? Can

they be postponed by thorough periodic audits? If they exist, can they be influenced by curative measures? And can the average limit of old age be advanced by careful surveillance, and scientific management?

These questions are important, not only to the scientific practitioner of preventive and curative medicine, but to every person, whether of early, middle, or advancing life, 33 per cent of whom, at the present time, succumb unnecessarily early, and in the interval between birth and death suffer needless ills that destroy the pleasure of wholesome and healthful existence. In the second part of our questionnaire this subject was dealt with most interestingly by 228 practitioners who honoured us with replies.

The range of years for the development of degenerative diseases appears to be from 15 to 75, with a large preponderance from 35 to 50 years.

216 replies were recorded, 73 report much good accomplished, 66 report modify and postpone (of these 30 included "cure" and 40 "prevent"), 35 report prolong life, increase efficiency, 6 report no benefit, 15 report fair, 13 report very little good, 8 report questionable.

The replies also, most of them from the leading, picked physicians of the United States, indicate a very great interest in degenerative diseases, and a belief that their course could be modified and postponed through these examinations.

FINAL SUMMARY

(a) Estimated number of periodic health examinations of apparently healthy individuals—in 1920, 5,000,000, in 1927, 20,000,000, (b) One-third of the deaths in 1925 (or 502,083 deaths) are attributable to degenerative diseases of middle life and old age, (c) Degenerative diseases manifest themselves at average age of 45 years, (d) 236 replies from eminent internists, and 18 replies from general practitioners, indicate yearly examinations would modify and postpone the degenerative diseases, and increase longevity and the maximum old age limit, (e) 35 per cent of apparently well individuals receiving periodic health examinations are found to harbour some form of unsuspected disease or physical defect, (f) 90 per cent of our replies from internists and outstanding clinics reveal that patients are advised to submit to periodic health examinations, (g) Labour in industry, employees in governmental and civic organizations, pupils in elementary and secondary schools, colleges and universities, practically all receive and welcome some form of periodic supervision, advice and service, and at least an additional 17,500,000 receive complete periodic examination service, and an estimated additional 3,000,000 men and women, not included in the above, brings the grand total to 20,500,000.

The above figures, while not conclusive, indicate the enormous interest that is developing in the subject of periodic health examinations. However, this is not a guarantee that all of these examinations now are to the highest degree com-

prehensive and efficient. The figures do indicate the lay public's receptivity to this important innovation. And their acceptance of the ministrations of scientific medicine places upon the profession a responsibility that should induce us to give a one hundred per cent service.

THE INFLUENCE OF THE PHYSICIAN WITH THE PUBLIC

A mistaken policy of silence, and a tradition of non-communicability in discussing the health problems of our patients, has militated against our full influence with the public. No profession, not even the ministry, can more effectually guide a large proportion of the community on a private or public policy. When we fail to exert this prestige, it is the fault of our profession and not of the public.

We have had three outstanding illustrations of this statement.

1 In 1920 the irregular practitioners of the healing art, the patent medicine venders in California, backed by subsidized newspapers, attempted to prevent animal experimentation in the teaching of medicine within the state. The scientific medical profession was aroused, the educated and sane people of that great state rallied to their support, and the antagonists of scientific progress were completely routed.

2 In 1922, a similar belligerent campaign against scientific medicine occurred in Colorado. For a time it appeared that the qualified doctors would have to forfeit those requisites which are indispensable to the teaching of their profession, and that the legislators of an important state were to turn thumbs down on the progress of civilization. Again, the scientific medical profession was aroused, exerted its influence, took the public into its co-operation, changed the tide toward sanity and common sense, and completely routed the opposition.

3 In 1921, Massachusetts, indifferent to the growth in its midst of the most subtle forms of irregular practices, found these same cults, who repudiated the conventions of civilization and considered themselves strong enough to terminate the teaching of scientific medicine, were organized to stop animal experimentation in the teaching of medicine. Slowly, but eventually, the profession of scientific medicine was aroused—they gained the co-operation of their patients, and together they routed the knights of unrighteousness beyond redemption.

The profession of medicine exerts a powerful influence, and can, if it will, convince at least 75 per cent of our people that it is their inalienable right to be kept well, and that the scientific medical profession is the one authentic, accredited, and competent agency equipped to keep them well so far as is humanly possible.

Lay people, in the majority, are waiting for us to take the lead in the practice of the healing art, to halt our mysterious methods, and give them face to face facts and guidance so that they may be maintained in good health.

GENERAL SUMMARY

1 The profession of scientific medicine, organized before the advent of Christianity, is the oldest of learned professions. Spiritually, morally, and scientifically, in all civilized countries, it is outstandingly the recognized authority in the prevention and cure of disease. Like the great religions of the world, it recognizes no geographical or political bounds, but unlike the great religions, it has no competitors. It is the one authority in scientific medicine recognized by all civilizations.

2 For centuries scientific medicine was practiced as an art and every scientific truth employed to make its authority more worthy and reliable. With the development of the exact sciences, it has strengthened its art and made more definite its authority and accomplishment by appropriating the proved truths of modern science, until it is now known, and properly so, as the science of medicine.

3 As we have shown, problems of disease, one after another, have been and are being conquered, and not only the trained physician has this knowledge, but the educated layman, too, is prepared to accept preventive and curative scientific medicine as the recognized authority, and rapidly the public is improving the opportunity to keep fit and submit to periodic surveillance by the practitioner of scientific medicine.

4 The thorough physical examination of millions of soldiers in the Great War, proved the value of scientific medicine, and convinced millions of men of the wisdom of a periodic physical audit, under the supervision of scientific medicine, to keep themselves well. Through systematic propaganda advocating preventive medicine to conserve personal health, the general public has become aware of the value of periodic health examinations, labour has been convinced of the value of keeping well, and the industries, as an economic asset, have been induced to establish scientific facilities to keep their employees to the highest degree in good health.

5 Change of opinion has been wrought in the minds of the laity, in their attitude toward the relative wisdom of periodic audits to preserve health, rather than to wait for illness to make evident a possible incurable condition. A wholesome evolution in the practice of medicine is resulting, and it promises to become a boon that will preserve personal health to the maximum degree, and afford satisfaction to the scientific practitioner of medicine because of ability to practice his profession with greater precision and success.

6 The American College of Surgeons has occupied an important position in this movement, which must command the support of the teachers of medicine, the practitioners of medicine, the authoritative societies of medicine, the journals of medicine, and through all dignified means of publicity, it must educate the public to the necessity of co-operation with scientific medicine.

if they are to be protected from illness, and if the happiness of their lives is to be enhanced

7 Statistics show that 25,112,309 individuals in the United States are employed in the industrial occupations. According to our limited survey, one-half of these individuals receive medical service and periodic supervision, conservatively we estimate that of the total employed only one-fourth receive this service, or 6,278,077

In the U S Army, Navy, and Marine Corps 250,188 of their personnel receive this thorough service, which is extended also to the members of their families. On the basis of four members in each family, this brings the estimate to 1,000,752

There are in the elementary and secondary schools, universities, colleges and professional schools, (continental United States) 27,381,816 pupils and instructors. Our survey shows that three-fourths of these receive medical service and periodic supervision, but conservatively we estimate only three-eighths, or 10,268,181

SUMMARY

Individuals in industrial occupations who receive complete medical service and periodic supervision (estimated)	6,278,077
U S Army, Navy, and Marine Corps, and members of their families (estimated)	1,000,752
Pupils and instructors in elementary and secondary schools, universities, colleges, and professional schools of continental United States (estimated)	10,268,181
Further, it is estimated that an additional 3,000,000 men and women, not included in the above, receive complete and thorough periodic health examinations	3,000,000
Total in these four classifications who receive medical service and periodic supervision (estimated)	20,547,010

8 Through our recent research and study with the industries, labour, insurance, indemnity companies, governmental, state, county, and civic authorities, our universities, colleges, high schools, and primary schools, and others in their preventive health activities, from our direct questionnaire to our most influential practitioners of medicine, there is convincing evidence that the public is rapidly accepting the policy of co-operation with scientific medicine, and the practitioner of medicine is more and more willing to do his part, all of which offers conclusive proof that within the next ten years, the momentum of this evolution will find 30,000,000 of our people accepting the program of early health audits to conserve personal health, as readily as they now accept the protection provided to the masses by public health activities

9 The health inventory—which brings into the strong trinity of co-operation the scientific medical practitioner, the standardized hospitals, and the laity—when thoroughly understood

and accepted, will insure to every practitioner adequate facilities to make thorough examinations and to the public a thoroughly reliable service

10 The questionnaire to internists and general practitioners reveals a keen interest in observation and study of the insidious diseases of middle and advancing age—the degenerative diseases, and most of them have expressed the definite opinion that yearly or semi-yearly health examinations will reveal these diseases in their incipency, afford opportunity to modify and postpone the progress of many of them, and definitely prevent the development of some of them. Inasmuch as one-half of our yearly deaths are attributable to diseases which reap their harvest in man's years of greatest usefulness, the significance of this authoritative information is apparent

11 This review of the evolution of the progress of clinical medicine and surgery emphasizes our responsibility as practitioners of medicine. We must give service to the utmost of our ability, and with the lay public must rest the responsibility of accepting it. Volunteer acceptance will

- (a) Preserve rather than restore the health of 100 per cent of the people, to the greatest degree possible through the sciences,
- (b) Require that practitioners of medicine be educated in the basic sciences before they may be licensed to practice the healing art,
- (c) Make readily available to medical schools all facilities necessary to teach scientific medicine, and to preserve modern research methods in the laboratories by animal experimentation,
- (d) Employ all dignified publicity methods, guided by scientific medicine, to enable the public to recognize the reliability of scientific medicine and to distinguish it from the subtleties of uneducated pretenders and imposters

12 This review estimates that approximately one-fourth of the laity are now indifferent to the benefits of scientific medicine, and that approximately another one-fourth are antagonistic to it, the victims of sophists, quacks, and other unscientific practitioners. While this affects detrimentally the individuals of adult life whose wisdom should guide them to choose judiciously, and with whom it is futile to protest, unfortunately it also affects their innocent children and dependents, and results in much unnecessary sickness and many premature deaths. The increased health rate, and the number of lives saved in 25 years of this century by the application of scientific medicine, proves that the refusal of this large proportion of our people to accept our aid without doubt accounts for much unnecessary illness and suffering, and at least 17,581 2 preventable deaths each year

13 More than two-thirds of our people morally and spiritually favour the 18th Amendment to the Constitution of the United States. In spite of the injudicious administration of this 18th Amendment, which has resulted in an orgy

of law-breaking, of self-indulgence, and ridicule on the part of the other one-third of our citizens, the foundation has been laid for a demonstration of race betterment and extension of life that will astonish the world

14 It is my wish that this review may aid to convince the people that one-half day each year should be set aside for a comprehensive health audit of each member of every family. As physicians we know the essentials, and the details of scientific medicine. We believe that the layman and woman from childhood should have a convincing knowledge of the essentials of preventive medicine. This knowledge must be imparted by dignified publicity methods, by teachers who are educated physicians. If this reasonable program is accepted and acted upon (and the present attitude of the people indicates that it is being accepted and adopted), I predict that our estimate of longevity will show an increase from 58 years in 1920, to 65 years in 1930, and what is of greatest importance, a decrease in preventable illness that will add immeasurably to the wholesomeness and happiness of more than 100 millions of people in the United States and Canada

THE MONTREAL HEALTH SURVEY

By A GRANT FLEMING, M B

Montreal

Montreal citizens in increasing numbers have, for some years, been dissatisfied with health conditions in their city. Voluntary health organizations and other groups have striven from time to time, by education and demonstration, to awaken the general public and the city administration to the situation. The result of their efforts has been an increasing interest in and understanding of health conditions and a desire to take some action to rectify the state of affairs. Added to this was the stimulus of the late typhoid fever epidemic.

The Montreal Anti-Tuberculosis and General Health League deemed that the opportune time had come for making a health survey of Montreal, and that it would be advisable to have such a survey sponsored by a group of representative business and professional men, who, as a group, were not associated with any particular health agency. An invitation to form such a committee was extended through Sir Arthur Currie, Chairman of the Health League. The Montreal Health Survey Committee is composed of the following: The Right Honourable Lord Atholstan, LL D, E W Beatty, K C, LL D, Lyon Cohen, Louis S Colwell, Sir Arthur W Currie, G C M G, K C B, LL D, Ernest R Décary, N P, Hon P R duTremblay, M L C, J T Foster, J A Francoeur, Sir Charles Gordon, C B E, Louis deLotbinière Harwood, M D, Sir Herbert S Holt, LL D, Beaudry Leman, C F Martin, B A, M D, LL D,

J W McConnell, Edouard Montpetit, LL D, Hon J L Perron, K C, M L C, Hon Donat Raymond. A technical committee of three Montreal health specialists, Doctors J A Baudouin, A Grant Fleming, and R St J Macdonald, was formed to collect the material to be studied to prepare a report based on this material and to make recommendations.

By consulting with individuals and groups working in the various agencies engaged in particular health functions, it was possible to gather practically complete information on the services being rendered, and so to verify the quality and extent of the services as indicated in the reported figures. The staff of the General Health League was placed at the disposal of the Committee for work in connection with the survey, the cost of the survey being met by the Health League.

The Field Staff of the Committee on Administrative Practice of the American Public Health Association was engaged in a consultant capacity, and the technical committee acted under their guidance and direction. The appraisal of City Health work was made by the consultants, using the Appraisal Form for City Health Work of the American Public Health Association. Doctor C E A Winslow is chairman of this Committee, Doctor W F Walker, Field Director, and Miss E L Smellie, Chief Superintendent of the Victorian Order of Nurses for Canada, was attached to the Field Staff for purposes of the Montreal Survey.

Assistance was received from many individuals and organizations. Special reference is made in the report to such assistance from Dr S Boucher, Director of the Department of Health, from Dr F G Pedley, in Industrial Hygiene, from Dr W T B Mitchell, in Mental Hygiene. The full report is being published through the courtesy of the Metropolitan Life Insurance Company, and will be distributed shortly.

From the Report, the following items have been selected as of special interest to the medical profession.

A comparison of expenditures of Municipal Health Departments for 1927 shows Montreal's expenditure as 39 cents per capita, and the average of twelve large cities of the United States as 78 cents per capita, ranging from 50 cents to \$1.18. The total health expenditures in Montreal by official and voluntary agencies are given in tables and show the total expenditure as \$1.81. This, however, includes the cost of bedside nursing services and of the hospitalization of communicable diseases and tuberculosis. If this be deducted, an expenditure is shown of 69 cents per capita, by voluntary and official agencies, on what are considered as health expenditures in most communities.

A study of mortality trends for Montreal shows an unmistakable saving in lives, particularly in the early age group. Judged with other cities of comparable size, the condition is not satisfactory. The tuberculosis death rate of 126.

the infant mortality rate of 113, the total diarrhoea and enteritis deaths (under two years) of 870, are high in comparison with other cities

The appraisal is based upon standards arrived at after careful and complete studies of many cities. The standard set is such that 25 per cent of the cities studied would attain a perfect rating. The goal is not, therefore, idealistic and unobtainable, but one which may be closely approached by any city with a well-planned and properly directed public health program

SCORE OF PUBLIC HEALTH ACTIVITIES

Activity	Montreal's Percentage
Vital Statistics	72
Communicable Disease Control	54
Venereal Disease Control	60
Tuberculosis Control	55
Maternity and Ante Natal Hygiene	38
Infant Hygiene	64
Pre School Hygiene	88
School Hygiene	49
Sanitation (Water and Sewerage)	94
Laboratory	34
Milk Control	57
Food Control	53
Popular Health Instruction	45
Average Total	62

This score means that the combined effort of Montreal's official and voluntary health services measures only about two-thirds of the best examples of such services in other cities of comparable size

Certain activities, such as mental hygiene, industrial hygiene, and cancer control, the public health practices concerning which have not been sufficiently standardized to permit of appraisal, are not scored, but are dealt with in the report

RECOMMENDATIONS

It is recommended that the island of Montreal be organized as a health unit, because of the advantages obtainable from a uniform control of this natural unit of administration. In the event of the adoption of a Borough System of government for the island, it is argued that Public Health should be one of the centralized services

It is recommended that where the public authority delegates to voluntary agencies its responsibility for the care of the public health, the city and the province each contribute one-third of the agencies' expenditures on health work of proved value, carried on according to a standard set by the public authority. In any case, the sums of money which are distributed should be allocated on a service basis

In a discussion of "Whom Should the Department of Health Serve?" it is stated that Community Health Service should be offered on a community basis without regard to the economic condition of the person served. Also, that in advising this, it is intended that physicians in health clinics be paid for their services

It is recommended that a Board of Health of

five members be instituted. That the University of Montreal and McGill University each nominate two members who, together with the Chairman of the Executive Committee of the City Council, shall be appointed as the Board of Health

The advisability of dividing the city into sanitary districts with a health centre in each district, and the advantages of a bi-annual census based on these districts are emphasized

To provide the Department of Health with prompt notification of births, provision for which is not made under the present system, it is advised that the reporting of births by physicians be enforced, and that a fee of 15 cents be paid for each report

The reporting of communicable diseases is much below the standard of other comparable cities

In regard to diphtheria immunization, it is recommended that, in addition to free distribution of the material for immunization, the sum of \$1 00 be paid to physicians for every pre-school child they report as having immunized. The cost to the city of hospitalization of diphtheria cases is more than \$100,000 00, which would pay for the cost of immunization of the present pre-school group at once, the cost thereafter would be \$20,000 00 per year

The establishment of culture stations throughout the city, a public health laboratory service for all citizens, and free biological products, are recommended

It is recommended that the use of silver nitrate, or some similar solution, in the eyes of the new-born be required, that diphtheria cases and contacts be released only upon negative cultures, instead of at the end of a fixed period as at present, the release from supervision of typhoid fever cases to be determined by negative cultures of stools and urine

Approximately one per cent of the population come as new cases each year to the Venereal Disease clinics. It is recommended that the reporting of cases by number be required by law, and also provision for compulsory treatment or isolation of those failing to take treatment in a satisfactory manner. Also, that there be a social service in connection with the clinics

The problem of tuberculosis is indicated in the 886 deaths. There are available 573 beds for indigent cases, there is no satisfactory provision for the institutional care of tuberculous children, no preventorium care, no open-air schools as part of the school system. The need for 350 additional beds for tuberculous indigents is pointed out, and the need for provision for institutional care of children, of preventoria, etc

It is recommended that the Department of Health provide a diagnostic service in the home, upon the request of attending physicians, for cases unable to attend at one of the tuberculosis institutes

Montreal's maternal mortality rate of 3.8 is comparatively satisfactory. Considerable work

is being done in this field, and the results are evident. Thirty-five per cent of the city's ante-natal cases have some ante-natal home nursing supervision, 13 per cent were under clinic supervision. The Victorian Order of Nurses attended 77 per cent of births, the Royal Victoria Montreal Maternity Hospital and L'Assistance Maternelle, 36 per cent of births occurring at home. The report states that, considering housing conditions, more than 16 per cent of births should occur in hospital. The need for further development of existing services and for the registration and supervision of licensed midwives is stressed. At present, midwives are licensed by the College of Physicians and Surgeons, but there is no local registration of those practising, and no supervision. (This is not an endorsement of midwives, but it is thought that as long as they are licensed, they should be supervised.)

The infant mortality rate in 1927 was 113, the rate for French-Canadians, 144, British-Canadians, 55, Jews, 26. It is recommended that, working in and from every well-baby conference, there shall be at least one graduate registered nurse. The lack of such personnel handicaps the infant welfare work, which is extensive, though varying greatly in quality.

An extensive review of the system of School Medical Inspection Service is presented. The school population is 126,000. There is no dental service. It is recommended that such a service be organized and a staff of 20 dentists, with a similar number of dental assistants be provided.

The need in Montreal for special classes is estimated as provision for

2,200 children in classes for mentally-handicapped, 1,260 children in open-air classes, 500 children in summer open-air schools (Forest Schools), 250 children in sight-conservation classes, 125 children in crippled children's schools.

Based upon the number of individuals who are to be served, the estimation being made upon the number of cases of communicable disease, tuberculosis, venereal disease, the number of births, the school registration, etc., it is estimated that Montreal requires 184 public health nurses (not including bed-side nursing service), and of this number, 132 should be on the staff of the Department of Health. On May 1st, the Department had 46 public health nurses. Some eighteen recommendations are made as to public health nursing, covering the needs of this important service.

Programs for Industrial and Mental Hygiene are presented. The need for amendments to the Housing By-Law are detailed. It is recommended that 50 additional neighbourhood playgrounds be provided. The situation regarding Cancer and Heart Disease is described, and certain recommendations are made, including a free pathological diagnostic service for cancer, the follow-up of communicable diseases to urge supervision by the family physician, the provision for adequate convalescent care and popular health instruction.

Chapters are devoted to a consideration of the Milk and Food Supplies and Popular Health Education.

The Report concludes with a suggested budget for the Department of Health, based upon the recommendations made, proposed by the Committee as a three-year program.

The expenditure in 1927 was \$274,201.58, the recommended budget is \$638,640.00, which is 91 cents per capita on the basis of a population of 699,500.

HEALTH DISTRICTS*

By M. M. SEYMOUR, M.D.,

Regina

Saskatchewan was created a province in 1905, but used the North West Council Ordinance passed in 1902 for health matters until the enactment of the Public Health Act in 1909 which provided for the establishment of a Bureau of Public Health.

In 1923 the Department of Public Health was created, and in 1927 was amended, making provision for the formation of Health Districts.

In the two largest cities of the province there is a full time medical health officer, who is assisted by such technical help as the size of the city calls for and its council can be persuaded to provide. In the smaller cities the medical health officer is a local practising physician, who gives more or less of his time to public health for little or no pay. As a rule, the part time medical health officer has no training in public health except that which he acquires by experience. Often he loses practice in communicable diseases because people find that they are shut in by the medical health officer but may escape if seen by another doctor. All these factors, poor pay, want of co-operation, lack of education of public opinion, scanty funds, contribute to render part-time medical health service of little value to the community. Places that have a full time medical health officer develop a useful organization.

By an amendment, which was assented to March 7th, 1928, the Saskatchewan Legislature enacted that the minister may prepare a scheme for the organization of Health Districts, consisting of a number of municipalities, and may submit the same for the approval of their respective councils. The amendment goes on to say that there shall be not less than eight rural municipalities in a district, and towns with a population of less than 10,000 shall be included. The scheme shall provide for the appointment of

* Summary of an address by Dr. M. M. Seymour, former Deputy Minister of Public Health, Saskatchewan, now Special Adviser on Public Health to the Saskatchewan Government, delivered at the Regina and District Medical Society, September 5, 1928.

a medical and sanitary staff, consisting of a qualified medical practitioner, one or more sanitary inspectors, one or more trained nurses, and a secretary, who shall devote their whole time to the health and sanitation of the district. The scheme shall give an estimate of the expense involved and shall state that one-half the expense is to be borne by the municipalities. The minister shall submit the scheme to the councils of the various municipalities for their approval, the councils shall consider it and approve or disapprove at the first regular meeting held after the receipt of the scheme from the Minister.

The cost for the District will be \$14 000 a year. Fifty per cent of this is to be paid by the rural municipalities, towns, and villages in the district, 25 per cent will be paid by the Department of Public Health, Saskatchewan, which also makes all appointments, directs and controls the work, 25 per cent will be paid by the Rockefeller Foundation, which will also pay for special training given to the personnel. The average cost per capita will be 35 cents.

The Health Unit will control communicable diseases, improve sanitary conditions, regularly inspect school children, make recommendations for the correction of defects, consult with teachers on all matters pertaining to personal hygiene and personal health, stimulate interest among adults in periodic health examinations, arrange for vaccination and immunization of school children and others, conduct clinics for pre-school children, hold pre-natal clinics and public health meetings, visit the homes and give instruction there.

The use of the laboratory will be made available without charge to local practitioners.

The district of Assiniboia is to have one of the first Units. In 1926 there were 187 deaths in this district, study of the mortality returns show that 119 of these deaths were from preventable causes. Four hundred and twenty persons were sick each day of the year in the district.

In 1926 there were three hundred and eighty-two deaths reported from tuberculosis. Authorities say that for every death from tuberculosis there are from five to ten cases left behind infected with the disease in a communicable state. Saskatchewan has 600 beds for the care of tuberculosis. Multiplying the number of deaths mentioned above by the lower figure, namely, five, we have 1,910, and 600 beds for 1,910 leaves 1,310 cases of tuberculosis in the communicable state in the homes of Saskatchewan. The personnel of the Health Unit will be made aware of where the homes in the district are from which the patients have gone to the Sanatorium. Inmates of these homes will be carefully examined by the physician who will give advice as to how the sick ones should care for them-

selves and how they can take precautions to prevent communicating the disease.

Heart disease and its prevention will be another interest of the Unit.

Denmark, Sweden, Italy, and Switzerland have maternal mortality rates of between two and three per thousand, Canada has an average of between six and seven per thousand.

Immigration from other countries is receiving much attention, yet 26,000 of our own newcomers, that is babies born in Canada, die every year before they are twelve months old.

The Health Units are designed to promote the conservation of that most valuable possession, human life.

THE WORKMEN'S COMPENSATION ACT OF THE PROVINCE OF QUEBEC

By F J TEES, M C, B A, M D,

Montreal

To the Province of Quebec belongs the credit of being among the pioneers in workmen's compensation legislation, the Act of 1909 being one of the first of its kind. Recognizing however that many of the provisions of the original Act had become obsolete, the provincial legislation, after unhurried consideration, recently introduced a completely revised measure which became effective on the first day of September, 1928.

By the new Act a Commission of three is established, with full jurisdiction to interpret and administer. This supersedes litigation in the Courts with its associated delays and other undesirable features, prominent among which has been the evidence given in the witness-box by medical "experts," frequently conflicting, oftentimes detracting from the dignity of the profession.

Indemnities for permanent total incapacity, for permanent partial incapacity and for temporary total incapacity, have all been materially increased, in the event of death, a "rente" equal to 30 per cent of the yearly wages is granted to the widow, with an additional allowance of 10 per cent for each child (30 per cent maximum) under the age of sixteen.

The injured person is entitled to all medical, surgical, pharmaceutical and hospital charges, (according to a tariff which has been approved by the Lieutenant-Governor-in-Council), as well as to transportation to the nearest hospital. Where there is more than one hospital, the injured person may select one of his own choice.

The clause relating to the choice of medical attendant reads as follows: "The employer must procure for the injured person whose mother tongue is French or English, the services of a

physician, and, if required, of nurses speaking his language."

To guarantee the payment of indemnities and expenses the employer is obliged to obtain insurance with an insurance company approved of by the Commission. Provision is made, however, at the discretion of the Commission, for certain companies to act as self-insurers, adequate guarantees being demanded.

Notice of an accident must be given to the employer by the injured within ten days. In the case of an accident entailing incapacity for more than seven days, the employer is required to notify the Commission within fifteen days. Many minor accidents will accordingly not become the concern of the Commission. If the incapacity lasts less than seven days the injured person is still entitled to medical attendance. Payments for temporary total incapacity at the rate of two-thirds of the daily wages begin only on the eighth day after the accident unless the incapacity exceeds six weeks in which case the first week will be compensated for.

A schedule has been prepared indicating degrees of permanent partial incapacity in re-

spect to certain injuries. In cases not provided for in the schedule this is intended to serve as a guide, taking into account "the injured person's capacity to continue the same kind of work as he was doing before the accident or to take up another kind of occupation."

With so many interests touched by legislation of this kind—those of the employer, the employee, the insuring companies, the medical and legal professions—it is not to be wondered at that differences of opinion should arise concerning certain minor details of the Act, but the new enactment is recommended to the study of those interested in industrial medicine as a constructive measure. There are those, who, having given much study to corresponding acts in various countries, believe that the Quebec Workmen's Compensation Act of 1928 embodies legislation that for fairness and practicability leaves little to be desired. The members of the medical profession of the Province are recommended to familiarize themselves with the details of the Act and to give a full measure of support to the Commission in the onerous task which they have assumed.

Men and Books

AN EARLY CANADIAN BIOLOGIST— MICHEL SARRAZIN (1659-1735) HIS LIFE AND TIMES*

By MAUDE E. ABBOTT, B.A., M.D.,
Montreal

The *David Prize* for the best essay on Canadian history was awarded for the year 1926 to Dr. Arthur Vallée of Quebec, for a brilliant biographical and historical study bearing the above title. Published in the following year, 1927, by the King's Printer, as one of the series of the *Quebec Archives*, this work forms a neatly bound volume of 299 pages, of which 220 are occupied by the monograph itself and the remainder by an appendix containing a selection from the original documents on which it is based (*Pieces justificatives*), the latter forming not the least valuable part of a very important publication.

The appearance of this book is a real event, not only in Canadian medicine itself, but in the history of medicine on this continent as a whole,

for it covers a period in which civilization was successfully replacing barbarism throughout all the then known parts of North America, and it untolds a chapter from the history of this time that until now has been but too little understood and quite inadequately portrayed. As its title implies, this book not only rescues from partial oblivion the name of an illustrious pioneer in medicine and biological research, whose achievements were well abreast of those of any of his contemporaries in these fields on this side of the Atlantic, it also presents a clearly defined picture of the practice of medicine in contemporary French Canada, in what is now the Province of Quebec, during the latter part of the 17th and early 18th centuries, some one hundred and fifty years after its first settlement. In this district, amid a scattered population that numbered at this time about 15,000 souls, nurtured under the ministry of the Catholic Church and her devoted sisterhoods, but unprotected as yet by the Act of Registration of 1788, a great variety of practitioners, regular and irregular, flourished. Among them were a few qualified barber-surgeons with experience gained in France, and then apprentices, as well as other persons of honest purpose, locally trained or self-educated, whose scanty knowledge was eked out by their gift of commonsense, as well as midwives trained in France or practising untrained. To these were added a host of

* *Un biologiste Canadien, Michel Sarrazin (1659-1735) Sa vie, ses travaux, et son temps*. Par Arthur Vallée, Professeur à l'Université de Laval. *Prix de Concours de l'Histoire de Canada, 1926*. *Archives de Québec*. Imprimé par L. S. Proulx, Imprimeur du Roi, Québec 1927, viii, 291 pages. Published also by La Librairie Garneau, paper cover.

chailatans, whose trade thrived upon the credulity of the people and the quaint beliefs and customs of the time. Among this heterogeneous crowd of worthy and unworthy followers of his art, the name of Michel Sarrazin, physician-in-chief of the King to the hospitals of New France, student of the *École de Médecine* of Paris, and Doctor of Medicine of the University of Rheims, Corresponding Member of the *Académie Royale des Sciences*, contributor to its *Transactions* of original dissertations on the anatomy and physiology of animals indigenous to Canada, and donor to the *Jardin Royal* of Paris of living specimens of practically the entire Canadian flora of his vicinity, stands out pre-eminent, as does that of his great successor in the next generation, Jean-Théophile Gauthier.

Dr Vallée explains in his introduction that, in order to depict the figure of this ardent research worker and foremost physician of his generation from the scanty material available, he has considered it essential to reconstruct as far as possible his environment, and to recall the status of the art and science of medicine at that time, both in Old and New France, as well as the more important personnel of the medical confraternity by whom he was surrounded during his fifty years of active professional life at Quebec and Montreal. For this purpose, as well as for that of the biography itself, he has made a careful research in the Dominion and Provincial Archives, in the Paris offices and libraries, and in the *Bulletin des Recherches Historiques* and elsewhere, for documentary evidence of all sorts, reference to which is shown throughout the book by footnote or annotation. The time has passed, he writes, for the birth and origin of Canadian history to rest on legendary tales or unsupported tradition. The occasion has arrived for the scientific presentment of historical facts based only on actual documents and on those precious but all too scanty records of old families and their dependencies which constitute the true background of the Old Régime in Canada. Unfortunately, apart from the Public Archives, little remains of a personal nature that could initiate us into the private life of Sarrazin, or reveal anything of his physique or character. Apart from his scientific publications, all that we have to go upon of a personal nature are several letters, thirteen in number, dealing with his administrative functions or scientific work, discovered at the *Académie des Sciences*, the *Bibliothèque de Rheims*, the *Seminaire de Quebec*, and the *Bibliothèque Nationale*. All the more necessary has it been, therefore, to review the few data that we have of his life in the social, political, religious, scientific, industrial and commercial setting of his time and place, where we can see him in his true values in very close proximity to those great names who in that era built the history of New

France. "Here it is that we have tried to retrace Michel Sarrazin de l'Etang."

The Foreword closes with an appeal to his French compatriots to be worthy of the high tradition that is unfolded to them in this book and to follow Sarrazin in making a definite contribution from French Canadian medicine to the science of the world. It may well be transcribed here:

"Car à côté des gloires militaires et politiques, ecclésiastiques et sociales, il reste le prototype de la science des premiers jours, et peut être de toujours à date, au pays de Québec. Or la science fait partie de l'histoire du monde. Au même titre que les arts et les lettres, elle a sa place dans la suite des temps. Et nous voudrions en citant Sarrazin aux générations montantes, provoquer dans les esprits la réaction nécessaire à l'éveil scientifique national. L'homme qui dans son lourd labeur a voulu porter une attention spéciale aux deux éléments qui devaient plus tard constituer notre emblème, le castor et l'érable, semble bien mériter qu'on se souvienne de lui. Nul ne peut à plus juste titre devenir le guide de ceux là que, suivant son exemple reprendront le sentier tracé pour fournir à leur tour l'apport de la science canadienne française à la science mondiale."

Who then was Michel Sarrazin, and what were his contributions to the science and life of his time? And what insight does Dr Vallée's book give us into the practice of medicine in this country before the English conquest of 1760?

A reply may best be given by tracing briefly below the thread of Dr Vallée's narrative. It must be understood, however, that in order to do justice to this subject the book itself must be read and studied by all those interested. For it is a classic in its line, as concise and authoritative as it is romantic and informing, and is moreover a pioneer achievement in a virgin field—the first authentic history of medicine in French Canada.

I THE COLONY AT THE END OF THE SEVENTEENTH CENTURY

ORIGIN OF MICHEL SARRAZIN

Michel Sarrazin was born on September 5, 1659, at Nuits-sous-Beaune in Burgundy, the son of Claude Sarrazin, bailiff of the estates of the Abbaye des Cîteaux and of Madeleine de Bonnefon his wife. These names are met with some two centuries earlier in Upper Burgundy, the country of Buffon and Daubenton. He arrived at Quebec in the summer of 1685, at the age of 26, bearing the title of surgeon, on a ship carrying a marine detachment (so-called after the ministry that despatched them). He thus formed a part of the large immigration to Canada of the sturdy Burgundian race that began in 1675 and permeated the colony in the early 18th century. Another surgeon of the same origin, Jacques Desquay, preceded him by thirteen years and settled at Three Rivers. Sarrazin's arrival in Quebec coincided with that of the Abbé de St Valier and the Intendant Denon-

ville, and it is probable that his services were immediately called upon in the epidemic that broke out among the accompanying regiment, and for other exigencies of the colony, for the following year, September 12, 1691, he was appointed by the Conseil Supérieur, Surgeon-major to the troops in Canada. This was ratified by royal mandate from Versailles five years later in the following terms

“Aujourd'hui 16 mars 1691 le Roy estant à Versailles voulant commettre une personne capable et expérimentée au fait de la chirurgie pour traiter et panser les soldats des troupes qu'Elle entretient au pays du Canada, et sachant que le Sr Sarrazin a les qualités nécessaires pour s'en bien acquitter, Sa Majesté l'a retenu et ordonné, retient et ordonne chirurgien des troupes qu'Elle entretient au dit pays aux appointemens qui luy seront ordonnez par les estats qui sont expédiés chaque année pour l'entretien des dites troupes et autres dépenses à faire au dit pays pour le service de Sa Majesté Mandé au Sr Comte de Frontenac, etc.”

The colony at the time of Sarrazin's first sojourn in Canada (1685-1694) could no longer be considered uncivilized, but it rather mirrored in spite of material difficulties, the life of the period in the Provinces of Old France. The population was already divided into parishes with larger centres at Quebec, Montreal and Three Rivers, and to these was coming an incessant influx of colonists of high as well as low degree. Law and order was maintained by the institution of the *Conseil Souverain de Québec* (later the *Conseil Supérieur*), which enforced the edicts and ordinances of the French rule and judged the difficulties of the community as they arose. This Council, formed as it was of the élite of the country, and numbering on its roll all the great names of the colony, constituted a local aristocracy of high repute. The clerical administration was organized on a peculiarly liberal basis for that epoch, with secular and regular clergy, while education was cared for by primary schools, a preparatory Seminary and Jesuit College at Quebec and the Sulpicians and others at Montreal. In spite of monopolies, commerce and industry, under the recent wise administration of the patriotic Intendant Talon, were flourishing, and to the fur trade, lumber and fishing export, were added grist mills, tanneries, etc., for home manufacture of the necessities of life. The Hôtel Dieu de Québec, founded by the Augustinian nuns in 1639, had become in 1690 a well-organized hospital of some fifty beds, containing a ward for men and another for women, with a place reserved for the care of sick officers and a Hôpital Général, caring especially for the mentally afflicted, had also been opened. Among the practitioners who had come as “medical colonists,” or from an interest in the fur trade or other reasons, are mentioned especially at this time Duchesne, a surgeon whose name is attached to medico-legal reports of the time, and who became proprietor of the later Plains of Abraham, Giffard, first physician to

the Hôtel Dieu of Quebec, who received the Seigneurie of Beauport in acknowledgement of innumerable services, and who was the first Canadian habitant to receive letters patent of nobility, and Jean Madry the noted barber-surgeon, the first alderman of Quebec, who succeeded Giffard at the Hôtel Dieu, and first established the practice of surgery in the colony, and, as of some prestige also, Timothy Roussel and Beaudoin. “To these, *médecins colons*, and many others less in the limelight, came Michel Sarrazin to lend the strong hand of his fellowship and support. Like them, conscious of duties beyond the bounds of his profession, he mingled with the entire local life. More than any of these he was to shed lustre upon Canadian science at its dawn, and on the medicine of this time. But, with perhaps a wider horizon, he remains of the same race and type. A brave man who knows how to do hard labour, a pioneer such as France has always known how to supply to the entire universe, carrying everywhere his faith, his science and his initiative.”

Of Sarrazin's actual professional activities during this early period of his life we know relatively little. His name occurs as surgeon attending several duels, and from his military appointment he was certainly active among the wounded during the siege of Quebec by Sir William Phipps in 1690. In 1693, also, he was appointed physician to the Hôtel Dieu by the Sisters, who held him in high esteem, and he undoubtedly practised his art, not only among the troops but throughout the colony, where under arduous conditions of travel he is said to have given gratuitous surgical aid within a radius of sixty leagues. On one of his visits to Montreal in the year 1692, he fell seriously ill and made a notarial will dated at the Hôtel Dieu and preserved in the City Archives, in which he bequeathed his surgical books to three local surgeons, the Sieurs St Amand, La Source and La Sonde, who had evidently attended him. The bequest was revoked later in a second will made during a subsequent illness of his at Quebec.

But the most interesting document extant relating to him at this time is a “*Mémoire des Médicaments nécessaires pour les Troupes du Roy au Canada pour envoyer en 1693*,” which is published here in the Appendix. It is, as Dr Vallée remarks, a perfect example of the polypharmacy of the day, being headed by the Theriacum of the middle ages (said to contain over ninety ingredients and containing also a rich supply of essential oils, syrups, ointments, plasters, extracts and drugs of all kinds, including the much disputed antimony), as well as “2 dozen lancets for bleeding,” syringes and cauteries for wounds, and other implements of the surgeon's armamentarium. Comparison of this list with that drawn up by Jackson the surgeon in charge of Phipp's forces is said to

have shown a very similar content in the English one

Little or no evidence appears at this period of the profound interest in natural history and the scientific trend which were so prominent a feature of Sarrazin's later life. Two facts only are significant of this. His intimate friendship with Franquelin, the hydrographer of the Jesuit College, and the dissatisfaction which he felt at the inadequacy of his training as a barber surgeon, led him, after eight years' practice in this country, to resign his military office and return to France for the purpose of obtaining further medical training and a university degree. The surgeon Beaudou was appointed by Frontenac in charge of the troops in his place in 1693, and in 1694 Sarrazin sailed for France, to return to Canada three years later with the desired academic qualification, a trained scientist with connections established among the leaders in his field of research, and to become, in deed as well as in name, the foremost physician of New France and an important factor in her rapidly expanding national life.

II MEDICINE IN THE SEVENTEENTH CENTURY SARRAZIN'S SOJOURN IN FRANCE (1694-1697)

There was apparently at this time some question of his entering the church, but his heart was evidently set upon his original vocation, and almost immediately after reaching Paris he seems to have entered upon his studies at the *Ecole de Médecine*, where he followed lectures at the amphitheatre Riolan, and received clinical instruction at the *Hôtel Dieu de Paris*. The degree of Doctor of Medicine, for which he had enrolled himself, called for a preliminary Master of Arts diploma, and a seven years' course of study, and that he was able to abridge these requirements within the three years of his stay in France is probably to be explained by the wide clinical experience which he had gained in practice in Canada. He presented himself in due course in 1697 for the Doctor's degree at the University of Rheims, from which some thirty years later his son also graduated.

It is difficult at the present day to realize the great distinction that existed in Europe and particularly in France at this time between the *physician* and the *surgeon*. The latter's work was not considered so much an *art* as a *trade* for which no long preparation was necessary, and this was usually acquired in the provinces. As already intimated, practically all the qualified practitioners in New France were of this type of barber-surgeons, and it is little wonder that a man of Sarrazin's intellect and humane feeling should have felt the urge for wider knowledge for his treatment of the sick. To understand the tremendous intellectual im-

petus which a university training in Paris at that time must have brought to this mature student, whose mind had been sharpened by hard won experience, one must recall the real status of medicine itself at this time. The seventeenth century was, as is known to us all, a classic age. It opened with Harvey's discovery of the circulation of the blood, which gave the impetus to other researches in physiology already bearing fruit, chemistry and physics were, under the guise of mistaken mechanistic theories, still in course of development, and the great anatomists, such as Morgagni and Malpighi, were opening the door to modern conceptions of the structural changes in disease, while at the same time the English clinician Sydenham, who died in 1689, had, by his power of observation and method of delineation of certain disease entities and their rational treatment, brought these new found principles to a focus in the birth of the great science of clinical medicine. The *Ecole de Médecine* was itself full of discussion and eager disputation of these new ideas that were trembling in the air. Moreover, this Paris, under Louis XIV, was actively fostering two other great scientific movements, allied to medicine and ministering indirectly to its advancement, both of which became to Michel Sarrazin an avenue and a source of inspiration for his future work. These were the *Jardin des Plantes*, and the *Académie Royale des Sciences*.

The *Jardin Royale* or *Jardin des Plantes* (which became after the Revolution the Museum of Natural History of Paris) was founded in the reign of Louis XIII by two "médecins du Roi" Herouard and Gui de la Brosse, and was not entirely unconnected with medical teaching, for in its deed of incorporation it was stated that since at the *Ecole de Médecine* the operations of pharmacy were not taught, it had been requested by the *Sieur Bouvard* that "three doctors chosen from the Faculty of Paris should be appointed to demonstrate to the students the interior of plants and all forms of medicines and to work on the composition of all kinds of drugs." How far this was carried out does not concern us, but under Louis XIV, Fagon, *médecin du roi* and director of the *Jardin*, a nephew of Gui de la Brosse and deeply interested in natural history, appointed from the province Joseph Pitton de Tournefort to be Professor of Botany at the *Jardin*. This de Tournefort, known as the great precursor of Linnaeus, is said to have founded the modern science of botany, and he it was who created the Museum of the *Jardin*, both from collections made in his own travels and from the fruits of the travels of others. Curiously enough, though a professor of botany, he was a fellow student in medicine of Sarrazin and sent in his thesis for the degree a year after the latter, in 1698,

and he became Sarrazin's earliest protector and his first link with the scientific world

The Académie Royale des Sciences was the outcome in the middle of the seventeenth century of intimate reunions of the best minds of Paris, among whom are mentioned the Descartes and the Pascals. It was founded in 1666 by Colbert, but was reorganized and regularly constituted by Louis XIV in 1699. Here were assembled the great men of the period, represented in their respective fields by such names as Tournefort, Réaumur, de Fontenelle, Boerhaave, Roemer, Peter the Great, Mariotte, Malebranche, and Sir Isaac Newton. These and such as these were opening the way for the new thought and advances of to-day, and they went about their work of preparation for the centuries to come with a precision of which we are far too often ignorant. Above all, they sought to widen the field of knowledge by the utilization of all the sources of information accessible to them, both by sending forth their members to distant parts, and by entering into correspondence with carefully selected persons in foreign places, realizing that science has no country and that relations between research workers must be world wide in scope. Sarrazin was made such a corresponding member, selected by de Tournefort on March 4, 1699, at the same meeting at which Sir Isaac Newton was elected an "associé étranger."

III RETURN TO CANADA SARRAZIN AS PHYSICIAN-SURGEON IN NEW FRANCE (1697-1735)

Dr Sarrazin's return to the colony after his three years' absence in Europe was probably hastened, rather against his will, by urgent appeals from the people and from the Intendant for the return of this man who "having acquired consummate knowledge of surgery during six or seven years in this country has gone to France to complete his perfecting in the study of medicine" (extract from letter from Champigny to the ministry dated November 6, 1695, soliciting his recall at a salary of 600 livres). It is quite clear from documents in the Quebec Archives that he came back with the definite intention of devoting at least a part of his time to the scientific interests he had developed in Paris and to utilize his distant location for the dissection of rare animals and researches into unknown plants, and not entirely to the treatment of the sick. That he continued to carry out this resolution in full measure in the midst of an enormous and most engrossing practice was not the least remarkable feat of his crowded life. Even before his landing he was plunged into the vortex of professional responsibility and activity, for a serious epidemic of hæmorrhagic "purpura" (i.e., typhus fever) so common under the cold and dampness and the complete lack of sanitation and inadequate food

supply that prevailed on shipboard in those days, broke out on the vessel on which he sailed, and spread from it to the habitants of Quebec and to the Religieuses of the Hôtel Dieu, which was deluged with patients. Sarrazin threw himself into the necessities of the situation with complete devotion and with apparently extraordinary success, for practically all those affected on board were said to have recovered from a malady which twelve years before had carried off more than eight hundred victims! In the face of his already high reputation, the inevitable result was that he was besieged on all sides by individual patients and by requests for consultations from practitioners and cures, and in the year 1700 he was appointed by Royal mandate, and on a salaried basis, Médecin du Roi and Physician to all the Hospitals of New France, with a vast clientèle that stretched from Quebec and Three Rivers to Montreal, and *ex officio* chief medical attendant upon the Governor of the Colony, Monseigneur de Laval, de St. Valer, and all other notables.

In this same year 1700, another epidemic, this time of "la grippe," broke out, and was followed during the winter of 1702 by the terrible scourge of smallpox, which, starting from a house in which a passing Indian had died of the disease, spread like wildfire through the city, with such a multitude of fatalities that individual burial could not be carried out and fourteen to eighteen bodies were committed daily in a single grave, to the number of some two thousand. The same dread disease visited the city in 1703, and the "Mal de Siam" (yellow fever), which had appeared sporadically from time to time, assumed the proportions of an epidemic in 1709. Tuberculosis was apparently indigenous and so attracted the concern of Sarrazin that he sent a request to France, which was promptly granted, for asses to supply the milk then recommended for these patients. Added to these infections were those maladies dependent on the severe climatic conditions, rheumatism and lung diseases, and the scurvy still attended the poverty of diet that often prevailed.

In the domain of general medicine Sarrazin was no less successful than in these more specific fields. He cured M. de Callières, at least temporarily, of a dropsy, and his treatment of pleurisy by alternate diaphoresis and bleeding, which was written out by him in manuscript, was employed with success by M. de la Galissonnière (as recorded by Kalm), and is an excellent illustration of his therapeutic method. He used Glauber's salts in huge doses, and was officially employed by the ministry to investigate, with the apothecary of the Jesuits' College, the chemical composition of this salt. His botanical work again helped him to greatly enlarge his practical knowledge of local remedies and he never fails to note in his description of

every plant which he gathered and studied, its pharmaceutical properties and the native uses to which it was put. The remarkable catalogue of two hundred living Canadian plants, presented by him to the Jardin des Plantes in 1704, reproduced in facsimile in the appendix of this book, abounds in such annotations. Some were noted to have diuretic properties, others were emetics or purgatives and, as in the case of the *Aster corona*, of use in epilepsy or convulsions, others, as the *Aralia canadense*, valuable for the treatment of anasarca, others were used by the Iroquois to neutralize snake bite, still another as an abortifacient. Throughout, however, he maintains his critical judgment, rejecting certain substances, as a certain bark for the cure of cancer, after due experimentation, as of unproved efficacy.

Nor did he in the exercise of his new profession lay aside the art of surgery which he had practised so successfully before his return to France. The annals of the Hôtel Dieu of Quebec contain many records of wounds dressed and operations performed by him in this later period of his life. Of these the most interesting is the account of his treatment of the Mother Superior of the Congregationists in Montreal, who suffered from an intractable cancer of the breast, the result it is said of the irritative action of penitential girdles, and who came to Quebec for operation by him about the year 1720. After treating the field of operation for some ten days, and partaking of the Holy Sacrament with his patient and the entire community of the Hôtel Dieu, he proceeded to the amputation of the diseased organ, with complete success, for the reverend patient made a good recovery and lived in the full discharge of her activities for nineteen years longer, dying at the age of seventy-nine. Another operation of the same sort was performed by him on another nun a few months later.

On Dr Sarrazin's activities in medico-legal questions we have not space here to dwell. Such enquiries were carried out regularly and efficiently, in small as well as large matters, under the Criminal Act of Louis XIV, and he was often called upon to officiate, as in an enquiry instituted on October 23, 1702 upon the cadaver of one La Chaume, assassinated.

Among the fellow practitioners who flourished in New France during this later period of Dr Sarrazin's life are mentioned especially Berthier who was also a salaried *medecin du roi* and assisted him in his attendance on the Governor, and was a surgeon at the Hôtel Dieu until 1725. Timothy Roussel, physician to the Hôtel Dieu, whose offices were in the rue de la Buade, where he built the famous house of the Chien d'Or. Benoit, surgeon to the hospital at Montreal with his son, born in the country, and educated only by local studies, and the Soupérans who

practised at Quebec through three generations with no other knowledge than what had passed from father to son. In a class by themselves were the Frères Boispineau, apothecaries at the Jesuit College, who openly practised medicine for many years with much success. Madeleine Bouchette, a trained midwife, who came out on salary from the king in 1722, represented another group, as did David and Gaschet, apprentices of Timothy Roussel. Among the most famous of the actual charlatans of the day were Marguerite Désy of Three Rivers, as celebrated for her cures as for her scandalous conduct, Phlem, who came out as a healer from France, and François Paris dit La Magdaleine and his wife. Considerable protest was made against this unchecked liberty of practice before the Act of 1788. Thus Lajus, physician to the Hôpital Général in 1712 petitioned the Conseil to limit the number of surgeons in Quebec to four, and to impose a fine of two hundred livres, with confiscation of all his drugs and instruments, on any surgeon from abroad setting up practice there, and Timothy Sylvain (Sullivan), of Irish extraction, was required by Governor de Beauharnois to pass an examination on his medical knowledge before Dr Sarrazin, the only person in the country competent to judge of his fitness.

IV and V A MEMBER OF THE ACADEMIE ROYALE DES SCIENCES SARRAZIN AS BOTANIST AND BIOLOGIST

At one of the first meetings of the Academy after its reorganization early in 1699, "all the Academicians present named different persons with whom they would be in correspondence on their respective sciences, either in the provinces or in foreign countries," and de Tournefort at this time designated Dr Sarrazin to be his Corresponding Member. He remained in this relation until de Tournefort's death in 1707, and made most of his botanical communications as well as his donations to the Jardin des Plantes, through the latter. Later, he presented them through the Abbé Bignon, until in 1717 he was again selected by the great scientist Réaumur to be his Correspondent, and from then on date most of his remarkable contributions on the anatomy and physiology of the native Canadian animals.

Sarrazin was thus only one of a large group of research workers scattered throughout the Antipodes, whose powers were being taxed along the same lines, and both missionaries and explorers had faithfully endeavoured to describe, and as far as possible classify, the new forms of plants and animal life. Considerably before his time too, both beaver and muskrat and their habits had been portrayed. Thus Dierreville had published at Paris in 1635 a *Canadensium plantarum*

history, and Pierre Bouchei, Governor of Three Rivers in 1665, wrote a *Histoire naturelle de la Nouvelle France, vulgairement dit Canada*, while an eighteenth century book bears the title *Traité des animaux à quatre pattes terrestres et amphibies qui se trouvent dans les Indes Occidentales*, followed by a *Traité des oyseaux*, and a *Traité des poissons*. It is, however, very interesting to note, writes Dr Vallée, that he stands in the forefront of these workers by virtue of his methods, both of observation and approach, which are those of modern biology. "An incomparable anatomist, whose descriptions were not to be surpassed, he pushes this study to the finer structure of the tissues and organs, to a point that might be controlled without fear of error by the microscope. A physiologist in embryo, he does not stop at the gross findings of the great animal functions but dives without hesitation into the most complex mechanisms that form the field of biological researches to-day. Employing hypothesis with discretion, he insists upon an absolute control of all his observations, and confirms by repeated examination of the same object under varying conditions the findings which he believed he had made in his first research."

"Moreover he had the passion of the research worker revealed in all his correspondence and all his intimacies, in his initiative and his power of overcoming difficulties and associating others with him for purposes of verifying and controlling his original findings. In all these ways he revealed himself a consummate man of science."

His actual scientific contributions can be only briefly enumerated here. In botany there stands first of all his great contribution to the Jardin Royale of living specimens of practically all the Canadian flora, which remained alive there ten years after their donation, with a descriptive catalogue which is reproduced in facsimile in the Appendix. It is said that he himself transplanted and watched over each of these plants as he studied them, and forwarded descriptive memoranda upon them with written instructions as to their care and directions to collect the seed and return it to him.

Of his original descriptions of plants not previously known, the most important treats of the "Pitcher Plant," which grows throughout America and was called by Tournefort after him the *Sarracena purpurea*, its botanical name to-day. His description of it is given with the same luxury of detail that characterizes his contributions on animal anatomy. It is published in full here and should be read.

A later botanical contribution of his that touches on a subject of national importance is that published in 1730 in the *Mémoires de l'Académie* on the "Sugar Maple." He describes four varieties in the country, notably

"*L'Acer canadense sacchariferum fructu minor*," and states that the French, following the Indians, know the sugary character of its sap in springtime, the climatic conditions favourable for a good running (snow, thaw, frost), and how much sugar a tree three or four feet round will give in a season. Competent authorities give him the credit, if not for the discovery, at least for the industrialization, of maple sugar. A specimen of the sugar maple was included in his large donation of plants to the Jardin in 1704. The "Blueberry" is another common Canadian fruit which Sarrazin made known in France.

An outcome of his insight into plant life significant of his truly extraordinary sagacity and foresight in the application of natural laws, is a fact told us elsewhere in this book (page 146-146), when dealing with his activities for the civic welfare. As a member of the Conseil Supérieur he had been asked to look into the question of harvesting and sowing grain, a vital question then, as now, in a country with short seasons, and Dr Vallée quotes from Kalm that "Dr Sarrazin had procured in Sweden a small quantity of winter wheat and barley. This was sown (by him) in autumn, passed the winter without damage, and produced fine wheat the following summer, with grains a little smaller than the wheat of Canada."

"but this winter grain gave a larger amount of fine flour than the summer wheat. *I have never been able to understand (wrote Kalm) why this experience was not continued*." In view of the modern transformation in the harvest acreage of Canada through the introduction of wheat adapted to a short summer, this practical application at that date of Sarrazin's scientific intelligence is truly astounding.

Sarrazin's first personal observations on the beaver appeared in the Transactions of the Académie Royale for 1704, (through de Tournefort) and reports a minute dissection of an animal weighing fifty pounds. As a model of his fine anatomical style his classic description of the muscles of the back and of their fasciæ and aponeuroses is given verbatim, and is so clear that, as his biographer says, one can reconstruct from it the whole lateral wall. From the functional standpoint his greatest interest centres upon the formation and minute structure of the generative organs, and here he made the curious discovery of a single cloaca, making the distinction of the sexes in the beaver difficult. His most masterly exposition, however, is given of the digestive tract and its linings, and he describes also the false ribs possessed by this animal. Twenty-eight years later he returned to this subject and sought other beavers for dissection, to confirm and extend his earliest observations.

Sarrazin's masterpiece in zoology was how

ever presented in 1725 through Réaumur, and is entitled "An extract of Various Memoirs of Monsieur Sarrazin on the Muskrat." It is illustrated by sixteen different figures made by himself (failing another draughtsman). The description of the stomach and the changes that take place in it during digestion and on summer and winter diet is a classic, and in view of his limitation to a "loupe," or some elementary form of microscope, is a real *tour de force*. He described also the carcajou, the "vache marine," "loup-marin," and in great detail the porcupine describing in the latter animal seven different kinds of skin and discussing at great length the question as to whether it throws its spines when attacked, as usual he delays upon the subject of the genitalia in which he finds a number of small peculiarities. He even attempted to dissect a skunk, but gave it up "because it had a dreadful smell, capable of making a whole canton desert."

VI SARRAZIN IN SOCIAL AND POLITICAL LIFE

VII AN INTELLECTUAL IN BUSINESS

VIII THE DESCENDANTS OF MICHEL SARRAZIN

IX SUCCESSORS OF SARRAZIN

It need scarcely be told that Dr. Sarrazin was essentially a worker, and found little time for relaxation, unless his scientific avocations could be so described. In political matters he was always active, having been elected to the Conseil in 1707, and he was honoured by being appointed Keeper of the Seals in 1733. He did not marry until his fiftieth year, but made a fortunate union then with the young Marie-Anne Hazeur, a lady of good family and position, whose father had owned large properties in the region of Gaspé, and was also Seigneur of Malbaie (Murray Bay). He himself, though apparently of little or no means on his arrival in the country, had become at this time a large proprietor. The remuneration of a "Médecin du roi" was not high, but due to repeated representations on his behalf by the Governors of the colony and others of his friends high in office at Quebec, his salary, which began in 1699 at 300 livres, was raised in 1702 to 600, in 1703 to 800, in 1709 to 1,100 livres, and in 1717, when his petition for an annuity of 400 livres for his son to study medicine in France was granted, it rose to the very considerable sum of 2,000 livres per annum. Desirous of obtaining for his growing family a worthy patrimony, he invested in what should have become extremely valuable land, namely, the fief of St. Jean, an area of six acres, comprising about a quarter of that occupied by the present city of Quebec, and running from the river St. Charles to the Grande Allée, as well as the fiefs St. François and Ste. Geneviève (with manor house attached and many buildings), for the sum total of 7,400 francs by deed of sale dated October 22, 1709. He had

also a house on the rue St. Louis and another on the rue Parloir. Through his wife he came into possession of other still more extensive properties in Gaspé, the fief de la Grande Vallée des Monts Notre Dame and the adjoining concession of l'Anse de l'Etang (from which he took the title by which he is known), and a part of the Seigneurie of Murray Bay. The possession of these combined seigneuries in his own right and that of his wife created him a Grand Seigneur, as is shown by the act of "*foye et hommage*" dated at Quebec July 10, 1726.

But misfortune overtook him in his last years. His house in the rue St. Louis was burnt, depriving him of a rental of 600 livres a year, there was a fall in the paper money of the time, and, worst of all, the failure of slate quarries which had been discovered on his Gaspé property, and in the operation of which he had become heavily involved, reduced him and his family to actual poverty. He died of a malignant contagious fever brought from a ship and caught by him from patients in the Hôtel Dieu of Montreal, where he died after two days of illness on the 6th of September, 1734, in his seventy-fifth year. He was buried without ceremony or éclat in the cemetery of the poor. He was survived by his widow and five children. Of the latter, two only lived to have descendants, Claude Michel Sarrazin de l'Etang, who returned to France, and whose name died in his female succession of the next generation, and Charlotte Angelique, who married Jean Hippolyte Gauthier de Varennes and founded an important French family that survives through several branches in the Province of Quebec to day. His humble ending did not prevent the public from acclaiming on all sides his goodness and charity and knowledge. His best epitaph was inscribed by the Religieuses of the Hôtel Dieu of Quebec in their register at the time and reads:

"For more than forty-five years he exercised his art in this country with rare charity, perfect disinterestedness, extraordinary success, surprising address, and an unparalleled devotion for every kind of person, which rendered him able to perform with joy and grace all that lay in his power for the relief of the sick under his care."

The last chapter of this volume visions the future of French Canadian medicine under the title "Les Successeurs de Sarrazin." Space does not permit us to enter upon this topic nor have we been able to dwell adequately upon the interesting subject of Dr. Sarrazin's social and political relations. But the book is there to be read and enough has been said here to show not only what manner of man this was whom we must acclaim as the pioneer of scientific medicine in this country, but also that Dr. Vallée's exposition is a solid contribution to the history of medicine on this continent of which the Canadian profession must be most justly proud.

possibly get in their homes. The "King Edward's Fund," which controls much of the money allotted to hospitals, has recently published the findings of its committee on the provision of pay beds in the voluntary hospitals. It is estimated that about 7,000 beds are needed in London and about 1,000 are at present provided. Many hospitals are adding "private wards," but so often there is difficulty over charters and funds left for charitable purposes that separate endowment is often required. When the private patient is admitted there is at once the demand for the practitioner concerned with the case to be allowed to attend, and very frequently there is a lot of squabbling over fees, while it is rightly urged that until the full cost of a pay bed in a voluntary hospital has been met there should be no fee for attending consultants. It will be seen that the problem is not an easy one, and it cannot be said that the latest report offers a complete practical solution, although it has very satisfactorily ventilated most of the difficulties.

Medical men in London have recently had sent to them a small pamphlet entitled "A Garden of Rest" in which some account is given of the

well-known crematorium at Golders Green, and the very beautiful details there set out suggest that some move ought to be made to get rid of many of the disabilities which militate against cremation in this country at the present time. It is extremely difficult and very expensive for the poor to obtain cremation and the existing legal requirements are very stringent. It is reported that the Home Secretary is revising the statutory rules and orders made under the Cremation Act and this, combined with some support of cremation by the public health authorities, may lead to an extension of the practice to the poorer classes. Most of the old village churchyards are now full, and new cemeteries are being opened, at very heavy cost, all over the country. Better, it is suggested, that the money thus expended be used for establishing a crematorium in each community and let the urns be interred in the church yards. There were only just over 3,000 cremations in this country in 1927 as compared with over forty-five thousand in Germany in the same period, so that there is considerable room for extension here.

ALAN MONCRIEFF

London, October 8, 1928

Letters to the Editor

USE OF SULPHO-CYANATE OF SODIUM IN HIGH BLOOD PRESSURE

Dear Sir

Dr A G Smith and I gave a paper at the last meeting of the Canadian Medical Association on the "Use of Sulpho-Cyanate of Sodium in High Blood Pressure," which appeared in the September issue of your *Journal*. The subject seems to have aroused unusual interest and I have had many communications in regard to it from physicians in different parts of the country. This is satisfactory but unfortunately in several instances our suggestions regarding dosage have not been followed, with regrettable results, and this letter is in the form of a warning lest a drug which promises well should get a bad name from improper use.

Dr J B Nichols of Washington, whose paper in the *American Journal of the Medical Sciences* (November, 1925) aroused our interest in the agent, recommended a dose of 15 grains a day. In our research we commenced with this amount but soon found that it was better to use smaller ones, and in our paper we recommended $2\frac{1}{2}$ grains twice or three daily. Even with 15 grains daily we got no untoward results except occasional nausea, but the smaller dose reduced the blood pressure equally well (although more gradually), and hence in our later work we gave

only $7\frac{1}{2}$ or even 5 grs in the twenty-four hours and this is the dose that we recommended.

But certain doctors have far exceeded even Nichols' dosage and write to me asking if possibly the resulting symptoms could be due to the drug. "The answer has been in the affirmative" as they say in the Legislature. I give a couple of typical examples—

(1) A medical man from the east writes that having heard our paper at Charlottetown he treated a patient as follows: "I gave her a few doses of 5 grains each, and one dose of 15 grains after the evening meal. The doses were given after meals three times daily. The symptoms following the evening dose of 15 grs have been rather alarming,—vomiting all night, and next morning jaundiced. Twitchings of the muscles and attacks of rapid heart. Blood pressure 172/120 (It was 240/140 before). Next day it was 208/140, twitchings less pronounced and jaundice clearing up, but heart keeps pounding and rapid. Of course no further doses of the drug have been given. I would be glad to know if a further use of the drug would be advisable."

(2) A doctor telephoned over the long distance to say that he had a patient with a blood pressure of 240/140 to whom he had given a number of 10 grain doses of sodium sulphocyanate every three hours. She was now

drowsy and in a stupor and would like to know if this was due to the drug

Now most valuable medicinal agents which are harmless in medicinal doses are toxic in massive ones and sodium sulpho cyanate is no exception

I hope that this letter may appear in an early number of the *Journal*, as we feel a certain indirect responsibility and fear that if this drug is misused it may do much harm

To repeat, the dose of sodium sulpho cyanate, in our opinion, should be five to seven and a half grains in the twenty-four hours, and in this amount it is free from risk and often is valuable in reducing blood pressure, when such reduction is indicated

I am, Sir, Yours faithfully,

R D RUDOLF

Toronto, September 29, 1928

AN UNUSUAL TYPE OF SUPERNUMERARY DIGIT

Dear Sir

In looking through the September number of the *Canadian Medical Association Journal* I came across an article by Dr Corrigan of Lampman, Sask, describing "An Unusual Type of Supernumerary Digit," the said article displaying a photograph of a rudimentary sixth finger attached by a pedicle to the little finger of a baby's hand. I was struck by the photograph and would like to tell you about a case that came under my notice on Sunday, September 30th. On that date I confined a patient, a young French Canadian woman. It was her sixth pregnancy. When the baby was born, a girl weighing eight pounds, I was surprised to see attached to each little finger by a pedicle a tiny supernumerary digit, the exact counterpart of the photo given by Dr Corrigan in his article. To make matters more interesting, the mother told me that out of her six children five had had little extra fingers, very similar to the baby born on Sunday, September 30th. She told me that the only child without the extra fingers was the one I brought into the world about thirteen months ago. This morning I ligated the pedicle with a silk suture and snipped off the little digits. One ligature slipped and there was quite a little bleeding until I applied another.

I enquired whether any other members of the family, either on her side or on her husband's had ever shown this tendency to have more than the normal number of fingers. She told me that one of her brothers had a webbed toe, but no other member of the family ever showed this abnormality except her own children. I am prompted to write you for two reasons (1) because of my seeing to-night by chance Dr

Corrigan's photograph of his case, which is an exact picture of my own, and (2) because I thought it most unusual to find five children out of a family of six with extra digits

Yours truly,

A R BAYNE

La Tuque, Que, October 2, 1928

AUTOMOBILE ACCIDENTS AND THE HOSPITALS

Dear Sir

The increasing number of automobiles on the roads of this country has provided a series of problems many of which are still unsolved

To the medical profession the victims of automobile accidents provide a problem of great importance and this problem is shared by the hospitals. The hospital receives what is left of the human wreckage after a motor disaster, and the staff is expected to provide immediate skilful treatment for which they are infrequently paid. It is this expense item which is proving such a burden on our hospitals.

At the time of the accident it is impossible for the institution to refuse admission to the sufferer, and this fact is taken advantage of by the persons involved in the smash. Once the injured patient is dumped on the hospital the squabble as to responsibility begins. This controversy is frequently long drawn out and the settlement indefinitely postponed. In the meantime the hospital is unpaid. Again, it happens that a claims' agent will arrange a settlement by agreement, without including the hospital in such settlement. A great many of the pedestrians injured by motor cars are poor and unable to afford the litigation which is often so necessary to obtain compensation. Their poverty is also a barrier to successful collection of a hospital bill from themselves.

In recent years a large group of tourists travel long distances in cars of little or no value. When such a gypsy tourist is involved in a smash the victims are a charge on the nearest general hospital, and there is practically no chance of collecting hospital charges, for the tourist is a stranger, his car is cheap and damaged and is frequently deserted after a smash.

All of these circumstances make it apparent that an unnecessary burden is placed on the general hospitals, which burden is increasing with the increasing number of motor vehicles.

It is very likely that legally a motor vehicle could not be classified as a lethal weapon but where a pedestrian is the victim of an automobile assault one may presuppose that the pedestrian did not run into the motor. Thus in the larger number of cases the motorist should at once be held responsible for necessary hospital

bills of his victim. In the case of injury of any individual where two motor cars are involved it should be laid down that no settlement should be completed before receipted hospital bills are produced. The details of this problem would necessitate the provision of suitable legislation and the co-operation of hospitals, insurance companies, and motorists' associations.

At present the hospital expenses of automobile accident cases is largely a charge on the general hospital which is supported either by

charitable endowment or by public taxation, whereas it should be directly charged to the agent causing the injury.

There is an effort at present being made in Great Britain to provide legislation along this line and I feel that the problem is sufficiently acute to be of interest to your readers.

Yours truly,

A STANLEY KIRKLAND

Saint John, N B, October 13, 1928

Provincial Association Notes

ANNUAL MEETING OF THE ALBERTA MEDICAL ASSOCIATION

The annual meeting of the Alberta Medical Association was held in Edmonton on September 18, 19 and 20, 1928. One hundred and ninety-six registered.

At 9 30 a.m. the business meeting commenced, with Dr W A Scanlon, President, in the chair. The minutes of the last meeting were taken as read.

The report of the Executive Committee was read, showing the post-graduate work that had taken place in the province during the last year. On motion this was approved of.

On motion, it was decided to continue to celebrate Lister Day in a suitable manner.

A letter was read from the General Secretary of the Canadian Medical Association, stating that at the last Canadian Medical Association convention it was decided that the fees would be due and payable on October 1st instead of January 1st each year. On motion this action was concurred in by the Alberta Medical Association.

A letter from the General Secretary, stating that the Canadian Medical Association approved of having field secretaries, and legislative committees for the provincial associations was read and referred to the Council of the College of Physicians and Surgeons to deal with as they saw fit. The meeting then adjourned.

The scientific program commenced after the above adjournment.

During the convention His Honour Lt-Gov Egbert, M.D., delightfully entertained the delegates and their wives at a garden party on the lawn at government house.

The adjourned business meeting was held on the evening of September 19th.

In the absence of Dr Emerson Smith, Mr W G Hunt acted as secretary.

The report of the Committee on the question of the establishing of a Canadian College of Physicians and Surgeons was presented by Dr J S McEachern, as follows:

"The Committee, consisting of Drs J S McEachern, Fred Campbell and L C Conn, appointed to report on the communication from Dr F N G Stair, re A Canadian College of Physicians and Surgeons, has met and considered the question.

"Your Committee is unanimous in the opinion that the Alberta Medical Association should endorse the movement to establish such a College and give it its full support."

On motion of Drs J S McEachern and L J Clarke it was resolved that the Report of the Special Committee, re the establishing of a Canadian College of Physicians and Surgeons, be adopted.

In the absence of Dr G M Reid, the Treasurer, the Associate Secretary presented the Treasurer's report. The receipts were \$402.44 and the expenditure \$319.68, leaving a balance of \$82.76. This was received and adopted, on the understanding that it be audited and filed.

The next question on the agenda was that of the continuation of the post-graduate clinics, and it was unanimously agreed that we ask the Canadian Medical Association to continue the post-graduate clinics along the lines of the past few years.

It was moved by Dr G E Learmonth, seconded by Dr T H Whitelaw, and carried —

"That this annual meeting of the Alberta Medical Association desires to place on record its appreciation and gratitude to the Canadian Medical Association for the post-graduate courses which have been put on in Alberta the last three years, also for its great assistance rendered at the annual conventions. The men sent to us have been of high standing and have rendered invaluable services to the profession in this province for which we are profoundly grateful."

Some discussion arose over the interesting information gathered by Dr Heber Jamieson concerning the Alberta Medical Association, and printed on the banquet menu card.

It was moved by Dr Walter Paik, and seconded by Dr I R Bell, and carried.

"That this association purchase sufficient copies of the menu card to send to all the members of the profession in Alberta, whose names do not appear on the register this year as attending the convention, and to all those who were present who apply for the same."

"Further the cost to be as stated, viz, 25 cents per copy."

The report of the nominating committee was presented by Dr Keillon as follows: *Hon. President*, Dr A Gillespie, Edmonton, *Past President*, Dr W A Scanlon, Edmonton, *President*, Dr P M Campbell, Lethbridge, *First Vice-President*, Dr R Parsons Red Deer, *Second Vice-President*, Dr T R Ross, Drumheller, *Secretary*, Dr H A Gibson, 216 6th Ave West Calgary, *Treasurer*, Dr J D Robinson, Banff, *Executive Committee for 1929-1930*: Dr R R Elder, Medicine Hat, Dr W T Hynes, Lacombe, Dr B R Mooney, Edmonton, Dr R R Hughes, Calgary.

Representatives on the Council of the Canadian Medical Association in addition to President and Secretary: Dr H H Hepburn, Edmonton, Dr L J O'Brien, Grand Prairie, Dr W A Lincoln, Calgary, Dr F A Nordbye, Camrose, Dr A G Scott, Bassano.

The report of the nominating committee he received and adopted.

The question was raised as to the appointment of representatives to the Council who later might be unable to attend, and after discussion it was moved by Dr W A Lincoln, seconded by Dr C W Huilbert, and resolved: "That the President and Executive Committee ascertain who are able to attend the Council meetings of the Canadian Medical Association, and be herewith given power to appoint others to fill the vacancies caused by those who cannot be present."

On motion of Drs Lincoln and Ross, it was resolved: "That we appoint the present Editorial Committee to be the Committee for 1929, as follows: Drs G E Learmonth, Chairman, H C Dixon, P M Campbell, Harold Orr, and T H Whitelaw."

The President, Dr Scanlon, raised the question of the expenses of the Secretary to the Council Meetings of the Canadian Medical Association, stating that, according to a former resolution, it was decided that this Association would pay the expenses of the President or his authorized appointee, and fifty dollars towards the expenses of any or all other official representatives to the Canadian Medical Association. The Association decided to make no change in their former action.

It was stated, however, that the Council of the College of Physicians and Surgeons was willing to pay the expenses of the Secretary to attend the Council of the Canadian Medical Association, therefore it was moved by Dr

Somerville, seconded by Dr Edgar Allen, and carried: "That we thank the College of Physicians and Surgeons for their offer and accept it, and further that the whole question be referred to the incoming Executive with power to act and to bring in a recommendation for the consideration of the next annual meeting."

It was decided that the time and place of meeting of the next convention be left with the new Executive Committee.

Dr Routley was present part of the time and told the Association something of what was being contemplated in the matter of organization in the other provinces. The Maritime Provinces were considering the question of a full-time travelling secretary for their three provinces. Manitoba and Saskatchewan were also considering the question of a travelling secretary.

He stated that none of the other associations paid the expenses of their delegates to the Council of the Canadian Medical Association.

W G HUNT,

Acting Secretary

ANNUAL REPORT OF THE GENERAL SECRETARY OF THE PROVINCE OF QUEBEC MEDICAL ASSOCIATION FOR THE YEAR 1927-28

A summary of the activities of the Association for the past year indicates that they were varied and numerous. After the Clinical Day held in Montreal last year, the President, Dr Stevenson, held a meeting of the Executive Committee, to elaborate a plan of work and action for his term of office. Proud of the success of his predecessor, he continued in his steps and his first effort was to put in practice the advice that had been given to him.

At this first meeting of the Executive, a committee for the study of the Workmen's Compensation Act was established, and also committees on Illegal Practice, on the Recruiting of Members, and the formation of Medical Regional Societies. These three committees were well completed by the Post-Graduate Committee which had been functioning in a very efficient manner.

The Executive Committee took under its charges the recruiting of members and the formation of Medical Regional Societies, with the help of the Post-Graduate Committee. We now show an increase of more than 400 new members, which added to the 250 of last year, brings our membership up to a total of more than 650, which is more than 25 per cent of the medical profession that endorses the movement and the ideas of our Association.

By the articles published in the medical reviews of the Province of Quebec, and more par-

ticularly in the *Union Médicale du Canada*, in the *Bulletin Medical de Québec*, and in the *l'Action Médicale*, numerous demands for the formation of Medical Regional Societies were addressed to us. With the help of a certain number of doctors of the district of Montmagny, visited by the lecturers of the Post-Graduate Committee, the Société Médicale du comté de Montmagny was brought back to life, and with the help of the physicians of the counties of l'Islet and Bellechasse, the Société Médicale des comtés de Montmagny, Bellechasse et l'Islet was founded.

Dr F. L. Dubé solicited our help to organize a District Medical Society, la Société Médicale du District No. 1, comprising the counties of Témiscouata, Kamouraska, Rimouski, Matane, Matapédia, Bonaventure, Gaspé and les Îles de la Madeleine, all counties corresponding to the counties of the district No. 1, of the College of Physicians and Surgeons of the Province of Quebec. We got in touch with the president of l'Association Médicale des comtés de Témiscouata et de Madawaska and at the meeting of the doctors of that Society, at which were convened the doctors of District No. 1, the first District Medical Society was founded, amidst an enthusiasm which was most gratifying.

The doctors of the counties of Charlevoix and Saguenay, isolated one from the other, conceived the idea of reviving the local Medical Society, which had been more flourishing many years ago. Again with the help of the Post-Graduate Committee, which delegated lecturers in that region, the foundation of La Société Médicale des comtés de Charlevoix-Saguenay became a fact, and it promises to be one of the most active of the regional societies.

The Committee on the study of the Workmen's Compensation Act and the Committee on the Illegal Practice report progress. These two committees assisted and defended the interests of the profession at large before the Provincial Government, jointly with the representatives of our universities and of the College of Physicians and Surgeons, and also with the help of the medical members of the legislature, who worked hand-in-hand to have the interests of the profession passed before the interests of the parties and endeavoured to protect certain rights of the medical men in connection with the new Workmen's Compensation Act. One result was that the government finally rejected the demand for establishing a school of chiropractics in Montreal.

The Post-Graduate Committee, which has already an existence of three years, is certainly the one which has the biggest amount of work

To date, twenty-two clinical meetings were held throughout the province, and more than six hundred doctors were present at the meetings. These lectures are still functioning, but, the fiscal year of the committee terminating on September the 30th, it is impossible for us to present a complete report of these meetings.

The Association had its representatives at the annual meeting of the Canadian Medical Association at Charlottetown, and Drs. Stevenson, Bazin and Lynch defended the interests of our profession, in the Council of the Association. Among other matters, it was decided at that meeting, that to become a member of the Canadian Medical Association, it was sufficient for a doctor to be in good standing with his College of Physicians and Surgeons and to be a member of a Provincial or a National Association. For instance, a doctor in good standing with l'Association des Médecins de Langue Française de l'Amérique du Nord, and who for one reason or another does not belong to the Province of Quebec Medical Association, could apply to become a member of the Canadian Medical Association and such a qualification would be sufficient.

It was decided that the year of the Association would start January 1st. Consequently, the existing Executive Committee will continue to act until that date, and the new Executive Committee which will be elected very shortly will direct the Association from that date.

The next annual meeting will be held in June in Montreal, when the Canadian Medical Association will be our host.

Finally, the Executive Committee held five meetings, in which most of the members took part. Besides the ordinary questions which were presented, the agenda contained numerous articles for the preparation of the Annual Clinical Day in which we obtained a very great success. We cannot but laud the great effort which the local committee on arrangements exerted in preparation for this annual meeting and particularly the work of the local Secretary Dr. Cabana who devoted his time and energy to bring this meeting to a complete success, of which not only the doctors of the City of Sherbrooke, but the entire population might be proud. In terminating this report, may I be allowed to thank, in the name of all the members of the Province of Quebec Medical Association, the local committee on arrangements, and especially the Secretary, who is always the working head, to all of whom the success of this annual Clinical Day is most entirely due.

LÉON GÉRIN LAJOIE

Medical Societies

X^{me} CONGRÈS DE L'ASSOCIATION DES MÉDECINS DE LANGUE FRANÇAISE DE L'AMÉRIQUE DU NORD

This Congress was held in the City of Quebec from September 5th to 8th. An important delegation from France was present, consisting of Professor and Mme C. Jeannin, Professor and Mlle Lereboullet, Dr and Mme P. Desfosses and Drs Simon, Charpentier and Leclerc.

The opening meeting, on Wednesday September 5th, was presided over by Dr P. C. Dagneau, Professor of Anatomy in Laval University and he was supported on the platform by the Hon. Athanase David, Provincial Secretary of Quebec, Mr Oscar Anger, Mayor of Quebec, Mgr Gosselin, Rector of Laval University, Dr Arthur Rousseau, Dean of the Faculty of Medicine, and the French delegates. Some 425 physicians of the French tongue attended from various parts of Canada and the United States. Several felicitous addresses of welcome were delivered.

In the afternoon Prof. Jeannin of Paris gave an address on "The treatment of puerperal infections after the method followed at the Obstetrical Clinic of the Pitié at Paris." His statements were based entirely on personal experience. At the Pitié, in 12,500 confinements there were 328 infected cases, a proportion of 2.3 per hundred. When one notes that the total mortality during the post-partum period is from 0.55 to 0.60 per cent and that puerperal infection alone accounts for one-quarter of these, the importance of the subject may be realized. The total mortality in puerperal septicæmia ranges from 12 to 66 per cent.

Professor Jeannin laid special emphasis on the plurality of puerperal infections. The conception of the condition as of single derivation has been productive of the worst therapeutical errors. On the contrary, for each form a specialized treatment is necessary.

He laid down the principal lines of treatment as follows:

In low grade infections local treatment in the form particularly of applications of lactic pap, (pansements à la bouillie lactique).

In case the uterus retains products of conception, it should be cleaned out. If it does not, reliance should be placed upon local tissue infiltrations, such as Besredka's method. The uterus should not be interfered with.

Infection of the broad ligaments calls for surgical intervention only if suppuration occurs.

When peritonitis supervenes laparotomy should be performed as quickly as possible. Professor Jeannin obtained four cures in seventeen cases operated upon.

When suppurative phlebitis occurs the focus may be isolated by ligature, or removed by

excision. However, interference should not be too hasty. The best results are obtained usually at about ten days after delivery.

In conclusion, the speaker stated that we were still comparatively helpless in handling these cases. The value of arsenobenzol and serotherapy was still to be established.

Professor Caouette, of Quebec, followed with a very full and well reasoned paper on "The usual causes and the prophylaxis of puerperal infections." In 237,199 births that took place in Canada from July 1st, 1925 to July 15th, 1926, there were 1,532 maternal deaths, or 6.4 per 1,000. Of these 1,532 deaths puerperal sepsis was the cause in 33 per cent. The best way to combat puerperal sepsis was for the obstetrician to maintain the same careful aseptic technique that was incumbent on the surgeon.

Dr Dubé, of Notre Dame du Lac, discussed the subject as it appeared to the country practitioner.

Dr L. Gérin-Lajoie, of Montreal, described the practice of the gynecological clinic of the Notre Dame Hospital in regard to puerperal infection, as follows: (1) Light diet, (milk and vegetables), (2) Local treatment, as ice to abdomen, very hot vaginal douches, warm rectal irrigations, (3) General supporting treatment, as camphorated oil, brandy, good nourishment, (4) General treatment directed against infection, such as the use of propidon alternating with electrargol or septicemine. The total mortality of their cases, including many of the greatest severity, had not exceeded 25 per cent.

Professor Fortier, of Quebec, read a very carefully prepared study of puerperal endocarditis, and was followed by Dr Vaillancourt on the "Ocular complications of puerperal infection."

The discussion on puerperal sepsis was continued the following day. Dr Louis Phaneuf, of the Carney Hospital, Boston, stated that the American School advocated conservative, rather than radical, procedures. The vaginal examination was discontinued entirely in Boston.

Dr Georges Labey, of Paris, discussed "Abscess of the uterus of puerperal origin." There were two forms, military abscesses and larger collections of pus occupying the whole thickness of the uterine muscle. Diagnosis is difficult in these cases. The principal symptom is pain in the uterus. The discovery of a swelling on the surface of the uterus is suggestive. Surgical intervention at once is indicated. Without it the prognosis is hopeless. He rejected the vaginal route. Well localized abscesses may be drained, but in most cases a total hysterectomy with Mikulicz drainage is required.

Dr F. de Martigny spoke in favour of vaginal hysterectomy. He thought it was the most radical operation and produced the least shock.

In about 5 per cent of cases of puerperal infection it was necessary to interfere surgically

Dr Oscar Mercier described the pyelonephritides which sometimes, though rarely, followed delivery. It was not enough in cases of developing infection to examine the uterus, but the urine should be examined as well. Treatment at first should be medical. Only after this failed was ureteral catheterization indicated, to drain the kidneys.

Professors Brousseau, Caion, and Laue spoke on the mental syndromes associated with puerperal infection.

The following day was given up to the discussion of the important question of diphtheria.

Professor Lereboullet, of Paris, dealt very fully with the question of treatment and prophylaxis. During the attack anti-diphtheritic serotherapy should be instituted early and be intensive and prolonged. He referred to the ordinary antitoxic serum of Roux and the purified form put out by the Pasteur Institute, the latter was not followed by dangerous accidents. The purified serum was to be preferred in the ordinary and larval forms of angina, in asthmatics, in those who had previously been injected, and, generally, in adults. The ordinary serum (Roux) was, generally speaking, to be preferred in malignant diphtheria. It should be employed in massive doses, a minimum of 200 c.c. a day, repeated for four or five days. It should, of course, be discontinued if anaphylactic reactions occurred. He thought that local treatment in diphtheria was useless. As adjuncts to the treatment he advised adrenalin, strychnin, camphorated oil, and sometimes ouabain. Anti-spasmodics were also sometimes of value and warm compresses about the neck. He pointed out that immunization did not always follow an attack of diphtheria, and he thought it good practice to follow up the case, on convalescence, with three injections of anatoxin-Ramon at intervals of two or three weeks.

Dr Lapierre, the Director of the School of Social Hygiene of Montreal, discoursed on the benefits of antidiphtheritic vaccination. Anatoxin-Ramon established an immunization in from six to eight weeks and was absolutely harmless. He thought the procedure should be carried out at the end of the first year of life.

Professor L. N. Fiset gave a complete review of the question of diphtheritic paralysis. According to certain American statistics it occurred in from 10 to 11 per cent.

The last day was given up to the discussion of various problems in psychiatry.

Besides the formal papers and discussions, clinical demonstrations were given in the various hospitals of Quebec.

It was passed unanimously by the Congress (1) That only those children should be admitted to school who came provided with a certificate of anti-diphtheria vaccination.

(2) That anti-diphtheritic serum and vaccine

should be supplied to poor families by the municipal organizations.

The election of officers resulted as follows: President, Dr P. L. Rhéaume, of Montreal; Vice-Presidents, Drs Albert Paquet, of Quebec, L. E. Phaneuf, of Boston, and Dr P. H. Laporte, of Edmundston; Secretary, Dr D. Marion, of Montreal.

The next Congress will be held in Montreal in 1930.

ONTARIO MEDICAL ASSOCIATION

ANNUAL MEETING OF DISTRICT NUMBER TWO

District number two of the Ontario Medical Association met in annual session at the Norfolk Golf and Country Club, Simcoe, on Tuesday, September 25th, with an attendance of about seventy-five members.

At two o'clock in the afternoon the meeting was opened with a short business session at which Dr A. J. McGarity, of Kitchener, was re-nominated Counsellor for the District, and Drs W. A. McIntosh, of Simcoe, and F. J. Burrows, of Seaforth, were elected Vice-counsellors for the ensuing year.

A communication was received from the Oxford County Medical Society extending a very cordial invitation to the members of the District to hold the next annual meeting in that county.

Dr Robert T. Noble, official representative of the College of Physicians and Surgeons of Ontario, then gave a review of the medical and narcotic drug acts, dealing with some difficulties which have arisen out of their attempted enforcement.

This was followed by a paper on "The thyroid subject" by Dr J. K. McGregor of Hamilton, and a brief address by Dr T. C. Routley, Secretary of the Ontario Medical Association, dealing with many matters of importance to members of the medical profession at the present time.

At four o'clock, the meeting adjourned in order that those present might have an opportunity of visiting the Norfolk Historical Museum and the grounds of Mr H. J. Brook.

Dinner was served at 6.45 o'clock at the Norfolk Golf and Country Club, followed by short addresses by Dr Weston Krupp of Woodstock, immediate past President of the Ontario Medical Association, and Dr Waid Woolner, second Vice-president. The concluding address of the evening was given by Dr Thos B. Fletcher, of Baltimore, on "Lesions of the pituitary gland and hypothalamic region, in relation to the etiology of diabetes insipidus."

A very enjoyable day was spent by all who availed themselves of the opportunity of attending this meeting. The cordial hospitality of the local committee and their wives left nothing to be desired, and the meeting was in every way a decided success.

ANNUAL MEETING OF DISTRICT NUMBER NINE

The annual meeting of the southern section of district number nine of the Ontario Medical Association was held in Sudbury on Thursday, September 6th, with an attendance of more than sixty. Dr W J Cook, of Sudbury, presided and was renominated for the position of Counsellor, while Dr A S McCaig of Sault Ste Marie was elected Vice counsellor for the southern section of the district.

At 9 30 a m, Dr F F Tisdall, of Toronto, gave a talk on "Deficiency diseases," followed by Dr A Primrose in an address on "Intestinal obstruction."

At 11 30 a m, the meeting adjourned to the Grand Opera House where Dr Canti's film on "Growth of tumour cells *in vitro*, and the effect of radium thereon" was shown, accompanied by an explanatory address by Dr James Miller, Professor of Pathology, Queen's University, Kingston.

Luncheon was served at the Nickel Range Hotel, after which Dr Roscoe Graham, of Toronto, gave an address on "Gottie." This was followed by a talk by Dr Ross Millar, Ottawa, Director Medical Services, D S C R, on medical problems relating to soldier's civil re-establishment.

Dr Robert T Noble of Toronto, who was present as the official representative of the College of Physicians and Surgeons of Ontario, then gave a brief review of the medical and narcotic drug acts, calling attention to some of the difficulties arising out of their attempted enforcement.

The dinner in the evening was followed by brief addresses by Dr E A McQuade, Trenton, President of the Ontario Medical Association, Dr A Primrose, Chairman of Council of the Canadian Medical Association, and Dr T C Routley, Secretary of the Ontario Medical Association. Dr J C Meakins, of Montreal, then gave the final address of the evening, his subject being "Arterial hypertension, its significance and treatment."

One of the matters which was brought up for discussion at the brief business session was the care of drug-addicts, and a resolution was passed with the unanimous approval of the meeting memorializing the provincial government to provide adequate hospital accommodation for drug-addicts, and also to make provision for their committal thereto.

Following the afternoon program, the members and visitors enjoyed a round of golf. With excellent weather and unsurpassed hospitality on the part of the local committee and their wives, the meeting was one of the finest ever held in the district.

ANNUAL MEETING OF DISTRICT NUMBER TEN

The annual meeting of district number ten of the Ontario Medical Association was held in Fort William and Port Arthur on Saturday, September 8th, with an attendance of about forty.

The morning session, which was held at McKellar General Hospital, Fort William, was opened with an address by Dr J C Meakins, of Montreal, on "Arterial hypertension, its significance and treatment." This was followed by a paper on "Common errors in the diagnosis of children's diseases," by Dr F F Tisdall, Toronto.

At eleven o'clock, adjournment was made to the Royal Theatre, where Dr Canti's film on "Growth of cells *in vitro*, and the effect of radium thereon" was shown, with an explanatory talk by Dr James Miller, Professor of Pathology, Queen's University, Kingston.

After luncheon at the Kamistikwia Club, Dr Roscoe Graham, of Toronto, gave an address on "Gottie", followed by a talk on "Intestinal obstruction" by Dr A Primrose.

Dr Ross Millar, of the Department of Soldiers' Civil Re-establishment, Ottawa, then gave a brief talk on the work of his department calling attention to a few of the medical problems with which they have to deal.

Dr Robert T Noble, official representative of the College of Physicians and Surgeons of Ontario, was present and reviewed the medical and narcotic drug acts, pointing out some of the difficulties which have arisen out of their attempted enforcement.

It was the unanimous opinion of those present that addresses such as those given by Dr Millar and Dr Noble were of distinct value to the members of the profession, not only as a means of gaining first-hand information, but of clearing up any misunderstanding which may exist.

In the evening, dinner was served at the Prince Arthur Hotel, Port Arthur, following which brief addresses were given by Dr E A McQuade, President of the Ontario Medical Association, Dr A Primrose, Chairman of Council of the Canadian Medical Association, and Dr T C Routley, Secretary of the Ontario Medical Association.

At the short business session which was held, Dr J C Gillie, of Fort William, was renominated Counsellor for the district, and Dr Chas Powell of Port Arthur was elected Vice-counsellor.

The problem of the drug-addict was brought up for discussion and a resolution was unanimously agreed to, memorializing the provincial government to provide adequate hospital accommodation for drug-addicts, and also to make provision for their committal thereto.

While many very excellent annual meetings have been held in the district at the head of the lakes, it was the general feeling of the members that this one left nothing to be desired, either from the scientific or social point of view.

Topics of Current Interest

STANDARDIZATION OF THERAPEUTICAL PREPARATIONS

"The League of Nations has just published the report* of this year's meeting of the permanent Commission on the standardization of serums, serological reactions, and biological products. The problems dealt with by the Commission are highly technical, for the bio-assay of drugs involves methods in which every detail has to be regulated exactly if reliable results are to be obtained.

The work of the Commission is, however, of great service to the medical profession. In the first place it secures international agreement regarding the units of measurement to be used. This alone is a great advance, for medical literature is international, and the use in works of reference of units which differ in value in different countries may lead to dangerous confusion. In the second place it is most important to have really trustworthy methods for measuring the activity of biological products, and the Commission is doing valuable work by its careful and critical examination of the numerous methods of standardization that have been evolved.

The following is a summary of the more important conclusions arrived at by the Commission.

I—STANDARDIZATION OF ANTIGENS AND ANTIBODIES

(1) *Anti-diphtheritic Serum*

'In view of new facts brought to light by the phenomenon of flocculation occurring in the mixture of specific toxin and anti-diphtheritic serum the Commission decided to study the evaluation of anti-diphtheritic serum and of diphtheritic antigen (toxin and derivatives) by the flocculation method.'

(3) *Anti-tetanus Serum*

The Commission now proposes to adopt the following anti-tetanic unit:

'The unit is to be determined with a standard serum in such a way that its relation to the American unit is exactly 2 International to 1 American unit.'

(4) *Anti-dysentery Serum (Shiga)*

The Commission proposes 'to adopt a standard serum prepared and distributed by the Danish State Serum Institute to establish the international antitoxic unit.'

'The serum is prepared for distribution in such a way that 1 unit is contained in 1/200 of 1 c cm, and that a dilution in the proportion of 1 : 200 contains 1 unit in 1 c cm.

A test dose of a dysentery toxin shall be defined as such a quantity that, when 1 c cm of this serum dilution is mixed with it, the mixture shall cause death in one-third of the mice receiving it by intravenous injection.

When a toxin is standardized in this way it may be used in titrating the serums.'

(8) *Blood Groups*

The Commission

'I Learn with satisfaction that, on the initiative of the Health Organization of the League of Nations, the nomenclature proposed by von Dungein and Hirsfeld for the classification of blood groups has been generally adopted, and recommends that this nomenclature shall be adopted for international use, as follows:

O A B AB

To facilitate the change from the nomenclature hitherto employed the following is suggested:

Jansky	O(I)	A(II)	B(III)	AB(IV)
Moss	O(IV)	A(II)	B(III)	AB(I)

'II Recommends the adoption of the following method of designating test-serums:

Test serum A (anti B)
Test serum B (anti A)'

II—STANDARDIZATION OF THERAPEUTIC SUBSTANCES BY BIOLOGICAL METHODS

(1) *Salvarsan*

The Commission endorsed the recommendations at the Geneva Conference of 1925 with certain modifications. The chief alterations were that it was decided to recognize a test for experimental action on animals infected with spirochaetes as an alternative to that in which trypanosomes are used.

The Commission recommends that a 20 per cent excess of toxicity above that of the standard would be a suitable limit for tolerance. It also recommends 'that the standard samples for neosalvarsan and sulpharsphenamine provided by Professors Kolle and Voegtlin respectively for trial are suitable, as regards toxicity and experimental therapeutic activity, for adoption as the basis for the international standards.'

(2) *Digitalis*

No 3 The Commission considered that they had now sufficient evidence before them to justify a somewhat wider recommendation with regard to comparative methods of testing than that adopted by the Geneva Conference of 1925. It considered that the following methods might be recommended as suitable:

'(a) The frog method in the form recommended by the Geneva Conference, or in its other modifications.

* Publications of the League of Nations III, Health, 1928, III, 6

(b) The method using intravenous infusion in the mammal, as described by Hatscher and modified by Magnus and his colleagues for the cat, by Knaff-Lenz for the guinea-pig, or by Tiffeneau for the dog

(c) The Commission considered that the methods described by Mansfeld, using portions of the isolated sinus venosus of the frog, and by Trevan, using the isolated auricle of the rabbit, merited further investigation, with a view to consideration on a future occasion

The Commission also recommended

'That, when the dosage of digitalis or its preparations is expressed in units of activity, the unit employed for any preparation and in any country should be an international unit, which should be defined as the specific activity contained in 0.1 gram of the international standard powder'

(4) *Insulin*

The Commission found that the results obtained by the use of the standard preparations recommended in 1925 'were uniformly favourable, and that the unit adopted and recommended by the Geneva Conference of 1925 was now in use all over the world as the only unit of insulin. In view of this satisfactory position the Commission decided to adopt the recommendations of the Geneva Conference of 1925 as regards the standard of insulin without modification

'That the dry preparation of insulin hydrochloride, prepared by the Medical Research Council of Great Britain, at the request of the Edinburgh Conference, should be accepted as the international standard preparation of insulin. That 1 milligram of this standard contains 8 units of insulin (or 1 unit = 0.125 milligram), as provisionally defined by the Insulin Committee of the University of Toronto'

(5) *Pituitary Extract*

'The Commission accordingly recommends, in the light of the uniformly favourable experience obtained since the Geneva Conference of 1925, that the dry preparation of the acetone-extracted fresh posterior lobe substance of ox pituitary be now definitely adopted as the international standard preparation for the biological evaluation of preparations of the posterior lobe of the pituitary body, whether containing all the active principles of the lobe, or the pressor or oxytocic principle only, in separate solution'

None of these conclusions requires much comment. In general it may be said that three years' experience in the use of the methods of standardization recommended at Geneva has shown that these are sound, and require only minor modifications

It is interesting to note that as regards biological standardization experience has confirmed the finding of the Geneva Conference that the only sound method of standardization is to compare the activity of the preparation to be tested with

a standard preparation of the same substance. For example, preparations of digitalis and the pituitary gland have to be standardized against standard preparations of these drugs, and experience has shown that it is not safe to attempt to standardize them against simpler chemical substances of known composition. For example, the methods by which digitalis was standardized against ouabain, and pituitary extract against histamine, are now recognized as unsound"—(*Brit. M. J.*, 1928, ii, 3)

IRRADIATION AND THE BLOOD

"The enthusiasms that have been aroused by the demonstrable physiological potency of irradiation with ultraviolet rays generated in various ways call for restraint before they are permitted to promote therapeutic procedures that may presently be discovered to be ill advised. It is better that disappointments should precede rather than follow their use. Irradiation cannot be rationally employed until its possible effects on the organism are thoroughly investigated in many directions. The antirachitic effects of exposure to ultraviolet rays are so striking and easy of demonstration that there has been a tendency to expect only beneficial results from irradiation, regardless of intensity and 'dosage'.

Some of the effects on the blood and circulation have already been determined with sufficient accuracy to justify the proposed precautions. Not long ago it was shown by Miles and Laurens¹ that the exposure of dogs to carbon arc radiation may give rise to variable results with respect to the changes in the content of erythrocytes in the blood. Depending on the dosage, increases and decreases were noted. Their results were interpreted, however, to indicate a stimulation of the hæmatopoietic system. A continuation of the study, by Maverson and Laurens,² shows that changes in the plasma volume also may take place. For example, the primary result of an individual exposure was a temporary increase in the plasma with recovery to normal within a few hours. This dilution of the blood occurred again but was not augmented by further exposures, its duration being determined by the strength of dosage and the interval between successive exposures. After massive exposures a slight concentration followed the initial dilution. Repeated exposures stimulated the hæmatopoietic organs to produce an increased number of red cells that persisted for several weeks after the last irradiation. However, indexes of colour, volume and saturation showed that the red cells in the period after irradiation are usually smaller and less saturated than before the treatment. Furthermore, a progressive leukopenia may develop.

These are phenomena that must be evaluated.

with some caution Mayerson and Laurens assert that erythrocytes may actually be destroyed by excessive irradiation with massive exposures. Such destruction is surely not a therapeutic desideratum. These investigators, who have had large experience in this field, believe that many of the conflicting results reported are without question due to the variation in the intensity and character of the radiation, the specifications of which are rarely given. However, as radiation does act as a hæmatopoietic stimulus to the normal relatively stable organism Mayerson and Laurens regard it as plausible at least that it would be particularly efficient in effecting regeneration in anæmic conditions. The persisting uncertainty should act as a warning against undue ventures that may actually border on quackery, until further explicit knowledge is available."—*J Am M Ass*, 1928, xci, 1038

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HOW CAN WE BEST PREVENT THE CONTRACTING OF COLDS?

"Here we would like to draw attention to the great danger just before our furnaces are lighted in the fall and after they are allowed to go out in the spring. At such times we are likely to sit in a temperature that is colder than the heat generated by our bodies can counteract. A temperature that is perfectly safe and even wholesome to move around in when we have a reasonable degree of physical exercise may be, and in fact is, a source of danger if we are sitting still or lying down. This should be our guide as regards additional clothing and heat.

Another not infrequent way by which the resistance of our bodies is reduced and the temperature lowered out of proportion to the amount of heat produced, is by getting wet or by cold and damp feet. In this case, there is necessarily an increased amount of evaporation going on and this is always attended by a decided loss of heat from the body.

On the other hand, there is the danger of dressing too warmly. This error applies more particularly to the so-called winter under-clothing which, as a matter of fact, should be very little, if any, heavier than that worn in the summer. We must bear in mind that in our homes, in our offices or places of business the temperature by our artificial means of heating during the winter time is practically the same as that which we enjoy in the summer time. Why, then, should we require any heavier clothing? The time for the heavier clothing is when we go outdoors into the cold air. If we

have heavy underwear, the chances are our skins will be bathed in perspiration, which will very materially expose us to cold when we go out, on account of the rapid evaporation of this perspiration.

Then there is the regulation of the diet. It must be borne in mind that our food constitutes the fuel and if it is not carefully selected it will not generate the necessary amount of heat, particularly in the winter. We require to see to it that our food is of such a character as will supply an ample number of calories. We must, therefore, choose food with heat-producing qualities—carbohydrates and fats.

In fact, the violation of any of the laws of personal hygiene has a tendency at all times to materially lower the resistance of our bodies and thus predispose us to colds or other diseases. Overwork, either physical or mental, so as to cause fatigue, also loss of rest and worry, all have a tendency to lower the vitality and constitute predisposing causes that are to be guarded against as far as possible.

Skin gymnastics are oftentimes beneficial. That is, it is well to begin in the early fall by taking tepid or cold baths or shower baths, or, if this is not convenient, to sponge the face, neck and chest with cold water every morning and to take occasional air-baths, that is, after the regular tub bath, whether it be warm, tepid or cold, and follow by a brisk rubbing.

All these have a tendency to give tone and resisting power to the surface of our bodies.

However, these are only auxiliaries. The main thing is to not leave anything undone that is essential to keep us physically fit. It must be apparent that proper nutrition, a properly balanced diet and the securing of a proper assimilation of our food and regularity of the evacuation from the body, both from the bowels and kidneys, are all extremely important."—*Health Bulletin*, Dept of Public Health, Toronto, Sept 22, 1928, vol 11

THE UNDERWEIGHT CHILD

"Undernourishment is a particularly menacing feature in relation to childhood because of the large numbers of individuals that seem to be involved, especially in certain parts of the world. As with any other deviation from the normal it is disconcerting, but notably so if it occurs at a period when maintenance of weight is not an index of welfare as it may be during adult age. Gain and growth are striking characteristics of the young. Undernourishment may be secondary to a variety of pathological conditions which make an otherwise adequate dietary ineffective. However, this is by no means the universal situation in the cases that commonly obtrude themselves on our notice. A recent study of underweight children by Wang, Hawks and

Hays* at the Nelson Morris Institute for Medical Research in Chicago indicates that the ability of such young persons to absorb and store nitrogen is fully equal to or greater than that of the usual "normal" child. Undernutrition therefore does not necessarily impair the alimentary functions, for the average absorption commonly exceeds 90 per cent of the intake. The fact that the nitrogen retention increases with the degree of underweight, as the experiments clearly show, indicates to the Chicago investigators that as the child gains in weight he is building muscular tissue as well as storing fat. Evidently the protein requirement of underweight children may be greater than that of the "normal" individual of the same age. Therefore, Wang and her co-workers conclude, in computing diets for underweight children, the protein as well as the caloric intake should be computed according to the standard, rather than the actual, weight of the child in question.—*J Amer M Ass*, Sept 15 1928

THE HISTORY OF HOSPITALS

"Some time ago it was not unusual to find in histories of the rise of Christianity on the ruins of paganism the statement that public charity to the sick and the establishment of hospitals were unknown before the days of Constantine the Great. A wider view of the ancient world, based on a greater knowledge of ancient society in Asia, as well as Europe and Northern Africa, has shown that hospitals for the sick were established long before the Christian era.

The Vicary Lecture on this subject, delivered by Dr George Parker of Bristol, has recently been published in the *British Journal of Surgery* (1928, xvi). Dr Parker has surveyed the whole field, and as a result of his studies is able to assure us that 'the earliest beginnings we know of can be traced to about the sixth century, B C, in places far apart, both in the West and distant East'. It is a curious and unexplained fact that there is no evidence of the existence of hospitals in Assyria, Babylon, early Egypt, or China. In the case of Egypt their absence is hardly surprising, seeing that the true Egyptian culture had disappeared by the sixth century, B C. It is, however, surprising that China, which so readily accepted Buddhist teaching, should not have adopted the Buddhist practice of founding hospitals, yet, as far as we know, there were no hospitals in China until, in quite recent years, they were established by Christian missionaries. We confess to some surprise at Dr Parker's statement that 'In England, besides monastic infirmaries, 577 hospitals and asylums were founded between 1100 and 1400'. As the population in 1400 is not likely to have exceeded three millions, and after the ravages of the Black Death was probably much less, this would give a ratio of

one hospital or asylum to every 5,200 of population, leaving out of account the monastic infirmaries which Dr Parker excludes. No doubt many, if not most, of these establishments were not hospitals in the modern sense of the word, but refuges for the sick poor, just as the existing St Bartholomew's Hospital was in its earlier days. This is a distinction which Dr Parker is careful to draw, but making as he does, large deductions on this account, the number of places for the treatment of the sick and wounded, in non-Christian as well as in Christian lands, is simply astounding. It is to Gautama and his followers that we owe, apparently, the hospital idea. Buddhist hospitals in India existed before the invasion of Alexander, which, moreover, only touched the northern part of that country. The Persians early founded hospitals and at Gondishapur we are told that there was a flourishing medical school, composed partly of Zoroastrians and partly of Nestorian Christians. In Greece, as is now well known, there were numerous institutions of the Aesculapian cult, where cures were wrought more by magic than by medicine. The more scientific Hippocratic schools do not appear to have had hospitals at their disposal, although there is not much evidence on this point. We cannot follow Dr Parker in his fascinating study of the Christian hospitals, and must content ourselves with a warm recommendation of his lecture to all who care for this interesting section of the history of medicine, nor will space allow us to do more than mention his researches into the history of Moslem hospitals, which are full of instruction for most of us."—*Brit M J*, 1928, ii, 540

CHRISTIAN SCIENCE AND THE DOCTOR

"Medical men who read the daily newspapers are probably aware that a schism has arisen in Christian Science ranks. The Christian Science Parent Church, some four years old, is considerably younger than the other member of the family, the Church of Christ Scientist. The word 'parent' is a little confusing, therefore, but it will be recalled that W S Gilbert raised much the same question in the case of the immortal Iolanthe, and some years ago (unless our memory has played us false) there used to be a standing debate on whether the hen was the mother of the egg or the egg the mother of the hen. It is not for us to comment on the heresy hunt which has started, but there is some interest in one of the points at issue—namely, the relationship of Christian Science teaching and practice to the medical profession. From literature sent to us by Mr John V Dittmore, contributing editor of the *Christian Science Watchman*, it appears that the Parent Church, founded by Mrs Annie C Bill in 1924, is convinced that the time has arrived for some recognition of the doctor by the Christian Scientist, or of the physician by the metaphysician, as Mrs Bill prefers to call him. Both Churches profess allegiance to the doctrines

* Wang, Chi Che, Hawks, Jean E, and Hays, Bertha B, Metabolism of Undernourished Children, V Protein Metabolism, *Am J Dis Child*, 1928, xxxv, 968

of Mary Baker Eddy, but the Parent Church produces ingenious arguments to show that the foundress of the faith was preparing the way for the recognition by her disciples of medical aid as an adjuvant of faith, when death ended the suffering for which she had been compelled to resort to injections of morphine. In the early stages of evangelization—so the argument runs—it was necessary to forswear medical methods in treating disease in order to emphasize the importance of 'methods of mind.' But the distressing fact remained that the majority of mankind rested its hope of recovery upon 'materia medica,' and since one of Mrs Eddy's axioms was that 'the greater controls the lesser,' it became easy to see that her sufferings were 'caused mainly by the majority of false beliefs of mankind.' Vain was the dismay of Mrs Eddy's students, vain their attempt to hide the doctor's visits, or prevent their leader's resort to the drug. While the majority of people continued to hold wrong beliefs Mrs Eddy could not escape from suffering. The time was ripe, therefore, for the second period of the crusade, the 'destruction of the degenerate element of wrong beliefs in which all disease originates.' And so Mrs Eddy took to morphine. The Parent Church alleges, with some show of reason, that the other group is illogical in its attitude towards drugs. Since all is mind, and there is no matter, it is plain that drugs are only a part of mind, or 'parts of the phenomena of the human mind.' Mrs Eddy was justified, therefore, in the intelligent utilization of the 'vehicle' of the human mind operating in that special mode. But the older type of Christian Scientist—the argument proceeds—is not justified in building hospitals, in miscalling them 'benevolent sanatoriums,' in preparing for the reception of diseased conditions, while all the time students of the cult are being taught that 'to permit disease to be present in the thought must bring it into the experience of the individual.' Far better that he should come over to the Parent Church, and invite the aid of the doctor in destroying the degenerate element of wrong belief by means of the immaterial vehicle, *materia medica*. It remains to be seen how far the physician will advance to meet the proffered embraces of the metaphysician, and co-operate in 'healing disease on the highest moral and spiritual basis,' so that 'Christian Science will be universally acknowledged to have brought to humanity the missing healing element of pure mental energy.' There is a type of mind within our profession which can discover in Hahnemann the father of rational dosage, and in Gall the

father of brain localization, for such it may not be too great an effort to regard Mrs Eddy as the mother of psychotherapeutics. In the meanwhile it is not without significance that there are Christian Scientists to-day who can allow to the medical practitioner some merit in dealing with disease, and it will be interesting to watch the effect of the new by-law of the Parent Church, which renounces commercialism and 'financial rivalry with medical specialists.'—*Brit Med J*, 1928, ii, 503

ON THE INTERPRETATION OF DECREASING MORTALITY RATES

"During the past twenty-five years mortality rates generally throughout the United States have had a downward trend. Different agencies undoubtedly have assisted in bringing about this fortunate situation. A preliminary report on five years of work in the health demonstrations of the Millbank Memorial Fund disclosed a reduction during the five years of approximately one-third in the death rate from tuberculosis and of nearly one-fifth in the infant mortality, which was attributed entirely to the health demonstrations of this memorial fund. It was also stated that the death rate in Syracuse from tuberculosis in 1927 was the lowest the city ever had. The *Journal of the American Medical Association* points out that a review of health conditions in the State of Illinois for the last seven years indicated that the deaths from tuberculosis and the infant mortality rate in that state have also decreased about 25 per cent, and Illinois claims that no other state in the union with a population in 1920 of four millions and more has reported an average annual death rate so favourable. Yet there was no health demonstration by the Millbank Memorial Fund in that state.

Eminent statisticians shake their heads sadly over the statistical claims of such propaganda. Allowance must always be made for changing economic situations, for general trends and for the many other factors that should ever be considered. Undoubtedly the Millbank Memorial Fund has exerted a most beneficent influence, nevertheless the report of so short a period cannot be taken as conclusive evidence of the beneficial effects of any one agency in any one health field."—Editorial, *J Am M Ass*, Aug 25, 1928

Fatal automobile accidents are assuming more serious proportions every year in Canada. Only two years ago the death rate at the end of August was 48 per 100,000. It is now 72—a rise of 52 per cent in this short time.

"Let every parent remember that there is no greater affliction that can be thrust upon a child than that of inheriting the type of parent who refuses to let him grow up."—*Health Bulletin*, Toronto, 1928, viii, 2

Abstracts from Current Literature

MEDICINE

The Lettsomian Lectures on Rheumatic Heart Disease in Childhood Poynton, F. J., *The Lancet*, 1928, ii, 537, 585, 637

Poynton's work on the etiology of acute rheumatism is too well known to require comment. Anything that comes from his pen on the subject is deserving of careful consideration.

Among the predisposing factors in connection with rheumatic fever he places strong emphasis on heredity and a nervous element, but thinks that there may be other causes related to diet and endocrine disturbances that have not been sufficiently studied. Dampness is less important than climatic changes. The dust of the streets may cause sore throats and thus rheumatism. The "tonsil problem" is not yet settled satisfactorily. While the tonsils, when healthy, must prevent infection, it is hard to be sure just when this function fails and the tonsil becomes a positive danger. And we still have too little information as to the frequency with which rheumatic fever occurs in children who have had their tonsils removed.

One of the greatest difficulties is to know when the carditis, so often associated with rheumatism, comes to an end. Dr. Poynton thinks that, in view of the fact that death rarely occurs during the earliest stages of the disease, and that we know so little as to the method of bacterial invasion of the body in the case of rheumatism, we have insufficient information to decide this question with certainty.

The lecturer still holds, as he did twenty-five years ago, that malignant endocarditis will give the clue in the matter of causation. He thinks, also, in harmony with his well-known views regarding the etiological relationship of a streptococcus in rheumatism, that malignant endocarditis is due to a fulminating infection with the primary organism, and is not secondary.

If mitral stenosis of rheumatic origin could be prevented in the young the after history of rheumatism would be much less terrible. Dr. Poynton has not found that vaccines and sera are of value in the treatment of malignant endocarditis of rheumatic origin.

In regard to the medicinal treatment of acute rheumatism Dr. Poynton deprecates the use of large doses of salicylate of soda in weakly children. Tolysin, a cinchonic acid preparation, is preferable, as it is without toxic effects. This is a valuable addition to the short list of drugs that can influence the rheumatic infection. The results of sanatorium treatment giving prolonged rest in heart cases have proved encouraging.

A. G. NICHOLLS

Chronic Non-valvular Disease of the Heart

Christian, H., *J. Am. M. Ass.*, 1928, xci, 549

This article has to do with cases with heart symptoms in which there is no evidence of disease of the endocardium or pericardium. The heart may or may not be enlarged. There may be no demonstrable lesion of the myocardium, even where the death is from cardiac failure. There may be signs of recent degeneration, but not of anything of long standing enough to cause the cardiac inefficiency present. Small foci of infiltration may also be discarded, widespread fibrosis is occasionally found as is the fibrosis following an infarct.

The disability is entirely from inefficiency of the heart muscle. Most of the patients are more than 40 years of age. Is the disturbance in the heart muscle functional? Electrocardiograms do not throw any more light on the question. A possible explanation is myocardial exhaustion, which is present after infectious or debilitating disease has caused some change.

There are patients with hearts that are upset by slight exertion, who feel respiratory distress, pressure over the heart area, and in whom the heart rate is easily accelerated. There may be extra systoles. This condition resembles cardiac asthenia, but is more curable. Rest and assurance usually are helpful, above all the patients must not be allowed to think that they have heart trouble.

Between this class and the cases with extensive fibrosis of the cardiac muscle there is a large group, usually past forty years, in which hypertrophy of the heart is the only sign, and this hypertrophy seems to be the chief cause of trouble. It is possible that the cause of the hypertrophy is one or more minor infections unnoticed because of their mildness. Cardiac hypertrophy almost always has a grave prognosis, as it indicates a progressive heart lesion. Cardiac arrhythmias do not play an important part in these cases. On the other hand, many of these cases are diagnosed asthma, chronic bronchitis, nephritis even, when the urine is decreased and shows albumen, all because the cardiac enlargement, being the only evidence of heart disease, is not easy to demonstrate. A therapeutic test with digitalis would establish the diagnosis easily. Digitalis is of great help in all these cases, clearing up the dyspnoea, oedema, etc. The type of chronic myocarditis which follows hyperthyroidism should of course be regarded from the point of view of prevention. Even after auricular fibrillation has developed thyroidectomy may effect a cure.

The author closes with a reference to cardiac dilatation, which he considers so rare a condi-

tion, apart from hypertrophy, that he is not sure the term should be used at all

P. M. MACDONNELL

Ueber die Bedeutung der Epithelkorperversgrosserung bei der Ostitis fibrosa generalisata Recklinghausen (On the significance of enlargement of the parathyroid bodies in regard to osteomalacia) Gold, E, *Mittel aus d Grenzgeb. der Med u Chir*, 1928, xli, 63

The author describes a case of Recklinghausen's generalized fibrous osteitis, otherwise osteomalacia, from v Eiselberg's clinic in Vienna, occurring in a woman of fifty-four years. A benign adenomatous tumour of the right upper parathyroid gland was removed. Six months later, the patient was found to be much improved in health generally, experiencing a return to vigour and exhibiting a gain in weight of 11 kilos. Previously to operation the blood calcium had been increased 30 per cent, after, it had sunk to normal. The calcium elimination by the urine, which before operation had been more than double the normal amount, was now reduced to one-third normal. This observation affords an interesting illustration of the importance of the parathyroids in connection with the calcium metabolism, this being probably a case of hyperparathyroidism.

A. G. NICHOLLS

La Vaccination Préventive de l'homme contre la fièvre dite ondulante (Preventive vaccination in man against undulant fever) Roziès, H, *Le Progrès Médical*, 1928, xxxix, 1583

The author refers to the pioneer work of Nicolle and Conseil in establishing on a scientific basis and beyond dispute the value of vaccination in the prevention of undulant fever or Malta fever, both by the subcutaneous and the alimentary avenues. Three vaccines used by subcutaneous injection are referred to: (1) the English vaccine, Eyre's modified type, (2) Nicolle and Conseil's vaccine, and (3) the vaccine of Ranque and Senez. The author concludes that the available evidence is insufficient to warrant a definite appraisal of the value of the first-mentioned vaccine.

Nicolle and Conseil's vaccine consists in a mixture of *Br. melitensis*, *para*, and *Br. abortus*. It was originally given twice, at weekly intervals, in doses of 900,000,000. Later 800 to 1,000 millions were given by three injections. The efficiency of their vaccine has been definitely proved.

The vaccine of Ranque and Senez is composed of *melitensis* treated with iodine. Three injections are given at intervals of five to seven days in amounts of 500, 750, and 1,000 millions respectively. Insufficient investigation has been carried out to establish the value or otherwise of this vaccine. The article gives the arguments

for and against the buccal route in the attempt to produce immunization.

The author concludes that there is no doubt as to the efficacy of the subcutaneous method of vaccinating against Malta fever, and this is to be preferred. He quotes Professor Renon as follows: "We may accept both methods. Vaccination by injection when we can, because the results are known and sure. When this plan is not possible it is our duty to use the enterovaccine by the gastro-intestinal route."

A. G. NICHOLLS

SURGERY

Acute Intestinal Obstruction Due to Impacted Gall Stones Powers, J. H., *Surg, Gynec & Obst*, 1928, xlvii, 416

Intestinal obstruction due to gall stone is by no means rare, and the four cases reported in this contribution occurred in 179 patients operated on for intestinal obstruction at the Peter Bent Brigham Hospital, Boston, Mass.

The mechanism by which gall stones reach the gastro-intestinal tract is that the process begins with cholecystitis and cholelithiasis, followed by ulceration, erosion, and pericholecystitis. Adhesions form between the gall bladder or ducts and the surrounding viscera, perforation occurring within the adhesions. By far the largest number of perforations occur between the gall bladder and duodenum, but fistulae have been found between the gall bladder and the stomach, jejunum, ileum, colon, and urinary bladder, as well as between the common duct and stomach or duodenum. Perforations may occur without any attending symptoms, as in a case reported by Reimann and Bloom. Approximately one-half the patients recover without operative aid, the stone being gradually passed onward through the bowel. In Wagner's series, 93 passed the stone by rectum, 159 were operated on, and 82 died without operation.

Martin states "the diagnosis of gall-stone ileus is seldom made with certainty", but Murphy, on the contrary, believes that "ileus due to a gall stone which has perforated through the gall bladder into the intestine may have no preceding jaundice but the inflammatory symptoms which accompany such a perforation ought to suggest the diagnosis."

Subcutaneous and intravenous administration of salt solution before operation forms a very important adjunct in treatment, thereby correcting the alkalosis of intestinal obstruction. It is advisable to remove the stone through a transverse incision in order to avoid such constriction of the intestinal lumen as occurs when a longitudinal incision is closed and inverted.

R. V. B. SHIER

Multiple Polyposis of the Colon Hullsiek, H E, *Surg, Gynec, & Obst*, 1928, XLIV, 346

A single polyp of the colon is not a rare occurrence, neither are multiple single polyps in the same bowel uncommon. Areas of polyposis, which are the result of ulcers, strictures, carcinoma, or other mucous membrane irritation, are frequently encountered, but the type of polyposis occurring in young people, in which normal mucosa is replaced by countless small tumours is not of common occurrence. Erdmann and Morris termed this latter form "adolescent, congenital, disseminated polyposis."

Lockhart-Mummery classifies adenomata in the bowel as (1) true, (2) polyps associated with hyperplastic tuberculosis, (3) multiple polyps associated with old stricture, (4) a polypoid condition resulting from ulcerative colitis. Erdmann and Morris classified on a clinical basis (1) the adult acquired type, and (2) the adolescent, congenital, disseminated type. The congenital form becomes evident in childhood or youth, is often shown in other members of the same family, and has a high malignancy incidence.

Fifty per cent occur between the ages of 15 and 35 years and Cripps saw three cases in the same family. In the series studied by the author 53 per cent were males and 47 per cent were females. A definite hereditary tendency was noted in 13 cases, or 11.1 per cent. The area most commonly involved is the rectum and colon representing 41.8 per cent. Lockhart-Mummery states that "almost all recorded cases of multiple polypi of the colon eventually become malignant." The mortality rate was 47.2 per cent.

The surgical treatment, if adopted, varies from appendicostomy to complete removal of the colon. Erdmann in discussing the treatment of the condition is quoted as follows: "One may sum up the present status of treatment of this condition by saying that the only method which holds out any hope for cure in the disseminated variety is one imposing upon the operator great technical difficulties, upon the patient great danger, and upon both the possibility that a successful operation may prove fruitless because the operator has been unable to determine accurately the extent of the process and has, therefore, left behind areas capable of transmitting all the original potentialities of the disease."

The conclusions arrived at by the author are as follows: (1) There are two distinct types of polyposis: acquired and congenital. (2) Multiple polyposis is most common in childhood and youth, the average age in this entire series being 30.9 years, with more than 65 per cent occurring before 35. (3) The symptoms usually persist for a long time before medical attention is sought. (4) Males and females are affected about equally. (5) There is a definite hereditary

tendency. (6) The mortality is high, 47.2 per cent under all forms of treatment. (7) The treatment is not yet standardized.

R. V. B. SHIER

Trauma as a Factor in Acute Appendicitis Bissell, A. H., *Arch of Surg*, 1928, LVII, 672

From a medico-legal standpoint it seems to be generally considered that injury is never a factor of any great importance in giving rise to acute appendicitis, and consequently compensation is usually withheld in cases of this nature. There is, however, evidence to show that trauma may play an important rôle in determining the onset of acute appendicitis. Von Neumann stated the incidence of such cases to be 6.6 per cent and several others have reported cases of traumatic appendicitis. Deaver's view is that whenever appendicitis occurs as the result of injury it will be found that the appendix shows previous disease, such as foreign bodies, concretions, strictures or adhesions, which do not necessarily cause symptoms in themselves.

It has been shown experimentally that pressure on the abdominal wall can force the contents of a full cæcum into the appendix. It is logical to assume that a blow can do the same thing and if the conditions of disease mentioned are present the consequent rupture of the appendix is quite conceivable. Any increase in the diameter of the appendix gives rise to three times as great an increase in its circumference.

It is not necessary to assume that a sudden high pressure in the appendix will cause a perforation. There may be intermediate stages of damage such as tears of the mucosal lining, or a concretion may be forced into the tip and cause ultimate necrosis.

Dr Bissell reports four cases in support of his contention. Each of these had been in good health and had had no previous abdominal symptoms. There was in each case a history of severe trauma, such as a fall, or a kick, with immediate abdominal pain, nausea, and vomiting. The symptoms were continuous up to the time of operation. In each case the appendix was found to be perforated opposite the mesentery, and in each case faecal concretions were found either in the appendix itself or in the pus surrounding it.

H. E. MACDERMOT

Sur Un Signe Radiologique des Perforations d'Ulcères Gastriques ou Duodénaux. (On a Radiological Sign of Perforation of Gastric or Duodenal Ulcers) Du Pasquier, G., *Révue médicale de la Suisse Romande*, 1928, XLVIII, 785

The diagnosis of perforation in the case of peptic ulcers is usually easy. Yet cases arise in which careful clinical examination leaves the

physician in doubt, a doubt that is the more distressing since the time for successful intervention is necessarily short. In cases of doubt operation is better than delay, but, of course, this procedure is not devoid of danger nor of other objections. Hence the importance of an early precise diagnosis.

One of the diagnostic signs of perforation of one of the abdominal viscera that is most often spoken of is a diminution or disappearance of the liver dullness. This is due to the escape of air into the upper zone of the abdomen below the diaphragm. Unfortunately, this sign is not invariable.

X-ray examination usually reveals a collection of gas below the diaphragm, as Assmann, Vaughan and Biams, and Biams and Meyer have shown. This observation is confirmed by Du Pasquier. The picture is very typical. It shows a clear crescent, more or less dense, according to the amount of gas that has escaped, the convexity of which is formed by the diaphragm and the concavity by the liver. The diaphragm itself is seen as a thin dark band, well defined, which separates the collection of air from the clearness of the neighbouring thoracic cavity. The crescent is best seen on the right side, being somewhat obscured on the left by the stomach. The author considers this to be diagnostic and reports three cases in which an accurate conclusion was reached through radiological methods. He does not advise repeated X-ray examinations under the circumstances, nor should the patient be moved to the X-ray department.

He concludes that a rapidly conducted radiological examination does not aggravate the condition of the patient, even when he is extremely shocked, but does not think that operation should be unduly delayed in order to permit of the attendance of the radiologist.

A. G. NICHOLLS

OBSTETRICS AND GYNÆCOLOGY

Die Puerperal Sepsis (Puerperal Sepsis)

Schottmuller, H., *Munchener med Wchnschr*, 1928, lxxv, 1589, 1634

This article discusses very fully and scientifically the subject of puerperal sepsis, which is occupying so much attention at the present time. It begins with a historical retrospect and then goes into the etiology, particularly in regard to the micro-organisms that may be at fault. The pathology is also dealt with at some little length, including the sequelae and complications. Professor Schottmuller thinks that puerperal infection falls into two groups, corresponding to wound-infection and wound-intoxication. The former may be due to a variety of pathogenic micro-organisms, of which the streptococcus is

the commonest and the most virulent, the latter, due to putrefactive germs (saprophytes).

In the matter of treatment the author lays stress upon the following points. When too little fluid is being ingested drip enemata of 10 per cent glucose solution should be administered. If the patient is very anæmic blood transfusion of from 500 to 800 cc is indicated. In cases due to infection with hæmolytic streptococcus injections of blood from persons convalescing from the same type of infection should be tried, in the hope of providing the necessary antibodies. For failing heart strychnine should be given, and Schottmuller thinks that adrenalin intravenously is of benefit, though this remedy has of late been somewhat overlooked. Antipyretics are of no lasting value, nor are the newer antiseptics of use, such as, collargol, electargol, optochin, argochin, argoflavine, and tripylavin. Schottmuller does not think it possible to attain "internal disinfection." Vaccines and sera he has not found of value in infections so acute as the puerperal form, nor is non-specific protein therapy reliable. Curettage of the uterus, to clear out fetal remnants, is recommended, provided that the os is dilated. This procedure is safer than manual removal. It is seldom that surgical intervention is called for, for the reason that it is not often possible to localize and deal with suppurative foci. Only two indications exist for extirpation of the uterus: (1) gaseous phlegmon of the uterus, or puerperal tetanus, and (2) septic thrombophlebitis.

In the important matter of prophylaxis, while admitting that infection may be introduced from without, Schottmuller is of the opinion that the danger is greater from within, i.e., from micro-organisms present in the vagina before labour. He emphasizes the necessity of ensuring, after the termination of labour, that the uterus and vagina be free of debris and blood clot. Many cases of puerperal sepsis are, moreover, to be attributed to criminal practices in the earlier months of pregnancy.

A. G. NICHOLLS

PÆDIATRICS

Tetanus Neonatorum Smith, D. L., *Arch Pæd*, 1928, xlv, 562

A child ten days old had developed spasms and stiffness of the jaws on the third day. The spasms gradually became generalized, convulsions occurring every day, there was some fever, but no vomiting. The baby would not nurse and refused feeding with a spoon.

Examination showed the child to have trismus and marked retraction of the neck. Muscular spasms were easily incited by handling the baby. The navel was red and with a discharge of bloody pus. The temperature was 101.5.

On admission to hospital the child was given 1,500 units of antitetanic serum with ten minims of magnesium sulphate (50 per cent aqueous solution) intramuscularly. The anti-toxin and magnesium sulphate were repeated the next day, together with five grams of chloral hydrate in water given by rectum every four hours. The child was much quieter in the day but still had some trismus and marked opisthotonos. There was marked improvement in the next three days. The magnesium sulphate hypodermically seemed to relieve the spasms brought on by feeding, which constituted a most troublesome feature. The formation of excessive mucus was checked by atropine gr 1/900, given every four hours and the cyanosis and dyspnoea were relieved by caffeine sodium benzoate, 1/2 gr given hypodermically after each feeding.

The child gradually improved and was discharged after twenty-three days, perfectly well. The tetanic symptoms subsided slowly, and it was frequently necessary to give some form of stimulation after feeding on account of the cyanosis and weak pulse which the act brought on. The caffeine sodium benzoate seemed to be sufficient for these and epinephrin 5 minims was also used with good effect. Otitis media also occurred as a complication, but it cleared up on opening of the ear drums.

The case is worthy of notice on account of the high mortality attending the condition. The note is made that a case of tetanus had occurred in the same house two years previously. H. E. MACDERMOT

PATHOLOGY

Multiple Primary Neoplasms in Lower Animals

Feldman, W. H., *Am J Path*, 1928, 15, 497

The occurrence of one or more primary tumours in the human subject is not uncommon and has been the subject of a fair number of articles. In the lower animals the observation is much rarer, chiefly owing to the fact that most of them do not have such long lives as man, especially, of course, is thus the case with those species that are used for food. It is well-recognized now that the lower animals may be affected by the same kinds of tumours that are found in man, and there is no obvious reason why new growths should not be multiple in them, except for the reason just mentioned. References to this phase of the matter are rare in the English literature.

Feldman reports the case of a thirteen-year-old male shepherd dog who was the subject of the following neoplasms, recurrent squamous-celled carcinoma of the mouth, with metastasis in a regional lymph-node, multiple hæmangiomata of the liver, malignant leiomyoma of the cæcum, papillary cystadenoma of the prostate,

a testicular tumour arising from the interstitial (Leydig) cells, and multiple lymphomatous nodules in the spleen.

The author points out that multiple neoplasms are frequently found in dogs more than ten years old. This suggests the influence of senile retrogression and subsequent tissue involution in the etiology. A. G. NICHOLLS

THERAPEUTICS

Problems in the Treatment of Ascites

Snell, A. M., *Med Clin N Am* May, 1928

The multiplicity of the causes of ascites has been recognized since the time of Galen. Cases presenting this sign fall into two groups, the larger being those in which the underlying disease may be quite easily identified, the smaller, a group in which the diagnosis is an extremely complex problem. Among useful aids in this problem are the liver function tests and the newer diuretics. Ninety per cent of hepatic ascites cases show some retention of dyes—bromsulphthalein or phenoltetrachlorophthalein—a marked retention suggesting primarily a liver fault, while slight retention suggests secondary liver effects from environmental or circulatory changes.

A "therapeutic test" with the diuretics—ammonium salts and merbaphen—may contribute information as to the cause of ascites. A failure of the abdomen to alter in contour following diuresis may indicate encysted fluid or peritoneal thickening. In cases of non-tuberculous polyserositis diuresis gives a welcome substitute for repeated tapplings and at times gives prolonged relief. It is thought that a poor response to the diuretics in cirrhotic ascites may indicate a poor prognosis.

The author urges that, in cases of ascites from obscure causes, a careful investigation of cardiovascular and renal systems should be made. Dye tests of hepatic function and serum bilirubin tests should be followed by a cautious therapeutic trial of the diuretics. J. B. ROSS

Peptone Treatment in Bronchial Asthma

Ramirez, M. A., *Arch Int Med*, 1928, 31, 368

This paper opens with what the author feels to be the somewhat sweeping statement that no conclusive study of bronchial asthma has as yet been presented. But when we consider how closely the asthmatic state is linked with the problem of anaphylaxis and desensitization, and how confused our knowledge is regarding these latter subjects, the statement becomes more acceptable.

Dr Ramirez then introduces the subject of non-specific desensitization, showing how we have given up the original idea of specific methods, and that now a large number of

protein substances are employed in non-specific therapy, but we still have no sufficient explanation for the success (not always complete) which it has achieved. The substance whose employment is considered in detail in this paper is peptone. It would be logical to expect that the chemical constitution of the particular brand of peptone used would have a definite and characteristic influence, but a review of the opinions of various workers shows that they differ greatly on this point. Auld, who is one of the chief supporters of peptone therapy obtained unfavorable results with Witte's peptone owing to its histamine content, but other workers found that even with the preparation suggested by Auld the results were disappointing, and even dangerous. The method of administration also varies with different workers, some give it by mouth, some intravenously, some intradermally and others subcutaneously, and whereas some claim good

results with the latter, others insist on the intracutaneous route being the better, since it is claimed that sloughing will be produced by subcutaneous injections.

Dr Ramnez has employed the various preparations of peptone and the various ways of administering it, in a series of 60 cases, and from the results obtained he concludes that this substance is of no value in bronchial asthma. In 40 cases the peptone was given either intramuscularly, intradermally or by mouth. No effect at all was noted. In ten more cases it was given intravenously, one c.c. of a 5 per cent solution twice a week for four weeks, in half the cases, and 2 c.c. once a week for four weeks in the other five. Slight improvement only was noted. In ten other patients Auld's method of intravenous injections was followed, but no success was obtained.

H. E. MACDERMOT

Obituaries

Dr Donald Booth Holden, of Victoria, B.C., was a passenger on the ill-fated plane on which he was crossing to Seattle to meet Mrs. Holden, who was on a holiday visit with her son Pilot Alec B. Holden, chief of the Tacoma Air Port Station. Many passengers had been carried to Vancouver and Seattle and everyone had enjoyed the safety and riding comfort of this new service, but August 25th was foggy and that, combined with the smoke of forest fires, was apparently the cause of low flying and contact with the water near Port Townsend, half an hour after leaving Victoria. The impact with the water was severe enough to have brought sudden death to the passengers. Dr. Holden's body was recovered and was cremated.



Dr. Donald Booth Holden

Dr. Holden was born in Belleville, Ont., sixty-two years ago. When he was four years old the family removed to Montreal. He was educated at McGill University, where he graduated with the B.A. degree in 1889, and M.D., C.M., in 1891.

For thirty-seven years, Dr. Holden practised in Victoria, and at the time of his death was one of the senior members of the medical profession in that city in point of years of service. He was a hard worker, cheery, and bright withal, retiring, but to those who knew him best, he was possessed of a kindly heart and a cool calm courage which never failed him or his patient in emergency. Dr. Holden took a keen interest in his profession and upheld the best traditions of practice in his relations with his colleagues and patients. He was a member of the Victoria, British Columbia, and Canadian Medical Associations, a member of the Union Club, the Yacht Club, and Colwood Golf and Country Club. His beautiful home and gardens at "Beresford" provided pleasurable relaxation during the past few years. A memorial service was held on September 26th at Christ Church Cathedral, which was attended by members of the Victoria Medical Society, graduate nurses and the pupil nurses from both the St. Joseph's and Jubilee Hospitals.

Mr. A. R. Holden, K.C., of Montreal, a member of the law firm of Meredith, Holden, Heward, and Holden, and Mr. R. C. Holden, of Westmount, Que., are brothers.

To Mrs. Holden and family the sympathy of the whole profession is extended and we trust that the esteem in which her late husband was held will be a comfort in this hour.

Dr. Samuel Allison, one of the oldest residents of the County of Peel, died in Caledon East on October 1st in his ninety-fifth year. Born near Dixie, Dr. Allison had come to Caledon East as a young man, and had practised there for more than fifty years. He was a graduate of the old Victoria School in 1862.

Dr. F. J. Ball. On September 17th the members of the medical profession and the citizens of Regina

were alike deeply moved on hearing that one of their most honoured members had passed away in the person of Dr F J Ball. Although he had been ill for the past month, still the hope that he would be around again was ever cherished by friends who grieved the more when the hand of death made all efforts futile.

The esteem to which he had attained was exemplified on the day of his funeral when his body lay in state at Knox Church surrounded by a bank of flowers, a tribute from those who knew him and those whom he had attended. With flags at half mast in the city, with six of his intimate friends as pall bearers and six of the medical profession as honorary pall bearers attending, he was given a Masonic burial in the family plot.

Dr Ball was born in 1865 at Rigby, Ontario, obtained his M.B. degree at Toronto University in 1893, and his M.D., C.M. at Trinity. He practised at Singhampton, Ontario, for twelve years, after which he went abroad and studied under some of the most eminent members of the medical profession, during which time he obtained his M.R.C.S. England, and his L.R.C.P. London. He was granted his F.A.C.S. in 1924. On return to Canada in 1907 he settled in Regina and built up a very extensive practice. In 1912 he limited his practice to consultations and surgery, and as such continued up to the time of his recent illness.

His professional bearing, kindly actions and friendly advice ever endeared him to the medical men with whom he came in contact, and won for him whatever honours they were able to bestow.

That he had not retired some years ago leads one to say that he practised his profession for the love of it rather than for financial gain. Dr Ball leaves a wife and two sons to mourn his loss and the sympathies of the whole medical profession is extended to them. S E MOORE

Dr James Henry Duncan, of Chatham, died on September 22nd in his 78th year, following an attack of pneumonia. He was born in England but came to this country when four years old. He graduated in medicine from the University of Toronto in 1881 and settled in Chatham in 1884.

Dr Duncan was one of the few remaining physicians of the old school—the family physician of the last generation—and was an active member of the medical societies and a familiar figure in all the gatherings of the profession.

Dr Duncan leaves one daughter, Dr Jean Renwick Duncan.

Dr Charles Hector Godin, Superintendent of Marine Hospital Service for the Department of Health, and a prominent member of the medical profession died on September 24th, 1928. Dr Godin, who was 56 years of age, had been ill for the past two months. He was widely known, his duties as Superintendent of Marine Hospitals taking him from coast to coast. For twenty-two years he was a member of the civil service, having been appointed by the late Hon L P Brodeur to the Department of Marine and Fisheries, and later transferring to the Department of Pensions and National Health, when the Marine Hospitals' service was transferred to the latter branch of the civil service. Dr Godin was born in Montreal, educated in the Montreal parochial schools, and also at Sherbrooke College, later entering Laval University, from which he graduated with honours in 1893. After practising his profession in L'Ange Gardien and Farnham, Que., he later returned to Montreal, and in 1906 he was appointed to the position in the civil service which he occupied for so many years.

Dr R. Leprohon. The death of Dr R. Leprohon, well known in French Canadian medical circles, occurred on September 20th, 1928, after a lengthy illness. He was born in St Charles, Que., on April 17, 1855. After completing his early studies he entered Bishop's College, where he graduated. Dr Leprohon practised in the United States and on the Gaspé coast. In 1922, because of ill health, he returned to Montreal.

Dr Neil MacPhatter, of Calgary, passed away on Monday, October 8th, 1928, after a very long illness, having been confined to his room for over a year. He was in his 79th year and graduated from the Royal College of Edinburgh, in 1881. Prior to registering in Alberta in 1922 he practised for many years in New York City.

Dr J J McDermott died at Massey on September 12th, in his forty-fourth year. He was born in Ireland, came to Canada with his parents at the age of four, and received his education in Kingston, graduating at Queen's University. For many years Dr McDermott was with the Spanish River Lumber Company, but retired later to a practice of his own at Sudbury. Dr McDermott was not only active in practice but had been keenly interested in matters both religious and political.

News Items

GREAT BRITAIN

Darwin and Downe House

Downe House, in which Charles Darwin lived for nearly forty years, is now a gift to the nation, entrusted to the British Association for the Advancement of Science. More than a quarter of a century ago, Andrew Carnegie thought of buying it and putting up a sum of money to settle, as he phrased it, one way or another, the question of evolution. But those whom he consulted felt bound to advise him that, as a business proposition the idea was unsound. Later on Sir Arthur Shipley, Master of Christ's College Cambridge, where Darwin had passed his undergraduate career, urged that some way should be found of making Downe House a national possession. But the times were unpropitious. A few years ago

Professor H F Osborn of New York, again propounded a scheme for transforming Darwin's home into an endowed centre for evolutionary research, and suggested that part of the funds might be supplied from America if the Royal Society would adopt and develop the idea. The Council of the Society, after friendly and detailed consideration, came to the conclusion that a very large sum of money would be required to transform a comparatively small country house into a research institution and to provide for its staff and maintenance. Even if the sum were available it could be spent to greater scientific advantage in the development of some of the existing research institutions. At Leeds last year Sir Arthur Keith, then President of the British Association,

issued an appeal, with the authority of the Council, for the more modest object of preserving Downe House simply as a memorial of England's greatest naturalist.

The appeal had a swift and fortunate response, for Mr Buckston Browne, a distinguished London surgeon, offered to buy the house, provide funds for its maintenance, and make it a gift to the nation in the custody of the British Association. With the generous co-operation of the Darwin family, the end has been achieved and the house and the eighteen acres in which it stands are now vested in the British Association. Some of the actual pieces of furniture used by Darwin in his study have been presented by the family, and Mr Buckston Browne is collecting other pieces of the same period so as to reproduce as closely as possible the actual environment in which "The Origin of Species" and many other great books were written. All the editions of Darwin's books are being got together, and as soon as the lease can be required from the present tenants Downe House will be opened to the public. There is a superstition that the aura of evil deeds lingers in the premises in which they were committed. If there be no supernatural vestige left by great men, at least our imagination is quickened and our sympathies attuned to gracious memories by seeing the simple surroundings in which they thought and worked. The rooms in which Darwin wrote, the garden paths on which he paced, and the simple green houses in which he conducted his experiments, if only because they are homely and undramatic, can make us realize the possibilities of human achievement. For there patience and genius, the most faithful devotion to pedestrian fact, and the most daring imagination combined to bring about a stupendous revolution in human thought. Access to Downe House will preserve for all time the inspiring personality of the man who in the words of Mr Punch's inspired epitaph, was "Recorder of the long Descent of Man, And a most living witness of his rise."

—The Weekly Times, Sept 1928

Sir Horace Darwin

The death is announced, at Cambridge, of Sir Horace Darwin, son of Charles Darwin, and a great inventor and perfecter of scientific instruments. Horace Darwin was born at Downe on May 13, 1851, the fifth son of Charles and Emma Darwin. He was educated at Trinity College, Cambridge. He was

Immediately after he had taken his degree, Horace went to the works of Messrs Easton and Anderson, an engineering firm of high repute, and served his time as an apprentice. It was at this time that he designed his first scientific instrument, a kymograph for recording the rate of growth of small plants. On his return to Cambridge he became interested in the work that the late Mr A G Dew Smith was doing for the late Sir Michael Foster. Foster, who had recently been appointed to the Chair of Physiology, wished to equip the laboratory with apparatus and found that, practically without exception, all the instruments required for following up the recent work on nerves, blood pressure, etc., had to be imported from the continent. He interested his friend Dew Smith, a rich amateur, who invited the co-operation of Horace Darwin, and together they started to produce instruments which were at least equal, and in many cases superior, to those of continental manufacture. A little later Darwin designed for his cousin, Sir Francis Galton, the series of anthropometric instruments with which so much of Galton's work was performed. With his brother, Sir George Darwin, he designed the bifilar pendulum form of seismograph for recording very small seismic disturbances. The rocking microtome was scientifically the most important instrument designed by Darwin. It was the outcome of the work of several men

A few years before the outbreak of the War he was made a member of the Advisory Committee on Aeronautics, appointed to advise the government what researches should be made to develop the science of flight. He devoted all his energies to designing instruments for the new conditions introduced by air warfare. He was always ready to discard an idea of his own if he felt that the other man's design was better than his. Sir Horace married in 1880 the Hon Emma Cecilia Farrer, daughter of the first Lord Farrer, and leaves two daughters.

Street Noises

At a joint council meeting of the People's League of Health, held at 12, Stratford place, London, on July 12th a resolution was passed—

"That in view of the fact that eminent neurologists and mental experts have emphasized the grave effect on the nervous system of noises which tend to increase the incidence of functional mental and nervous disorders in our midst this meeting urges upon the People's League of Health the desirability of calling attention of the government to the need for the control and diminution of preventable noises in our streets, and asks that the subject shall receive the serious attention of the Ministry of Health."

A letter embodying this request has been forwarded to the Minister of Health, who has been asked to receive a deputation consisting of Sir Farquhar Buzzard, Sir Maurice Craig, Sir Robert Armstrong Jones, Sir James Purves Stewart, Dr A P Tiedgold, Prof G Robertson, and Dr Thomas Beaton.

Sh Arthur Keith, Hon FRFPS

At a meeting of the Royal Faculty of Physicians and Surgeons of Glasgow, held on September 3rd, the honorary Fellowship was conferred upon Sir Arthur Keith, MD, FRS. During the course of an "at home" given in the Faculty Hall to members of the British Association for the Advancement of Science, Sir Arthur Keith signed the roll of honorary Fellows. It will be recalled that last year Sir Arthur Keith was President of the British Association, and the subject of his address was "Darwin's theory of man's descent as it stands to-day."

The Medical Research Council

By an Order of the Committee of the Privy Council Professor Robert Muir, MD, FRS, Sir John Herbert Parsons, FRS, FRCS, and the Right Hon Sir Charles Philips Trevelyan, Bt, MP, have been appointed members of the Medical Research Council, filling the vacancies caused by the retirement of Professor Georges Dreyer, Sir Archibald Garrod and the Right Hon William Graham, MP. The new appointments became effective on October 1st.

The Bernhard Baron Trust

Mr Bernhard Baron has by deed transferred the sum of £575,000 four per cent Consolidated Loan to trustees for the foundation of a trust to be called "The Bernhard Baron Trust for Hospitals and Asylums for Orphans and Crippled Children." It is provided that during the next twenty years the total amount available for distribution shall be approximately the same each year, and the trustees shall in every year apply such part of the capital and income of the fund as they deem fit for the benefit of hospitals of various kinds and homes and institutions for the care of orphaned and crippled children. The money available is directed to be applied in the proportion of 75 per cent among Christian and undenominational hospitals, homes, and asylums, and 25 per cent among similar institutions under Jewish control. The Marquess of Reading is nominated chairman of the board of

trustees, and the annual distribution will take place on December 5th of each year, which is the anniversary of the donor's birthday.

The Rockefeller Foundation and Cambridge University

The International Education Board of the Rockefeller Foundation has offered the sum of £700,000 for certain new developments in the Departments of Physics and Biology of Cambridge University. The amount mentioned includes a contribution of £250,000 for the proposed new University Library. Plans for this building have been prepared by Sir Giles Scott

provisionally, and the cost for building and maintenance has been estimated at £500,000. The condition attached to the Board's offer is that the University shall raise the balance of the amount necessary to complete the whole scheme. For this purpose a balance of £229,999 is required.

The retiring Vice Chancellor, the Rev G A Weeks, Master of Sidney Sussex College, in announcing the offer, said, "If the University is able to accept this splendid offer of assistance, not only will the whole cost of building the new library and providing for its maintenance be met, but a new and magnificent opportunity of advancing the physical and biological sciences will be put into our hands."

NOVA SCOTIA

At the annual meeting of the Eastern Counties Branch of the Medical Society of Nova Scotia which was held at Antigonish in August last, the President, Dr M. E. McGarry, of Margaree, was in the chair. The afternoon of the first day was given up to papers contributed by Drs Murphy, Mack, and K. A. MacKenzie, of Halifax, and Dr W. F. MacKinnon, Antigonish. Members and guests were entertained at dinner by the president, after which the presidential address was delivered and a business session was held. The morning of the second day was given over to clinics at the St. Martha's Hospital. The officers elected are: Honorary President, Dr George E. Buckley, Guysboro; President, Dr O. R. Stone, Sherbrooke; Vice-presidents, Drs R. F. MacDonald, Antigonish, and H. C. S. Elliott, Guysboro; Secretary, Dr P. S. Campbell, Port Hood.

At a meeting of the Cape Breton Branch of the Medical Society of Nova Scotia, held at the General Hospital, New Waterford, on September 14th, a resolution was passed favouring the use of toxoid as a preventive of diphtheria. It is planned to immunize the school children of Sydney against diphtheria by this means. The meeting at New Waterford was addressed by Dr Samuel Bell, of New York, who spoke on "Asthma."

Medical men figured quite prominently in the provincial elections held on October 1st. Four of the Conservative, and eight of the Liberal candidates were physicians. Those who offered in the Conservative interests were Hon. Dr W. N. Rehfuss (Lunenburg), Hon. Dr B. A. LeBlanc (Richmond), Dr H. A. Grant (Victoria), and Dr A. MacD. Morton (Halifax). The Liberal candidates were Drs J. L. McIsaac (Antigonish), T. I. Byrne and W. J. Kennedy (Halifax), J. W. Reid (Hants), James A. Proudfoot and M. E. McGarry (Inverness), and W. R. Dunbar and D. L. MacKinnon (Colchester). Of these, Drs Morton, McIsaac, Proudfoot, and McGarry were elected. The dental profession was represented in the contest by Dr M. E. Morrison, Liberal, (Guysboro), who is one of the successful candidates.

Delay in the reconstruction of the Highland View Hospital, Amherst, has been occasioned by the necessity of obtaining the consent of the citizens to the borrowing by the town of \$40,000.00 to supplement money already on hand. This consent has now been obtained, the plans for the new structure have been accepted, and work has been commenced. A large part of the walls of the old buildings are being utilized, but the interior has been replanned. The reconstructed hospital will accommodate fifty-two patients. Seventy thousand dollars will be expended on the building and twenty thousand in

furnishing it. Pending the completion of the hospital building, the training school for nurses has been disbanded. The work of the hospital is being carried on in houses built for residences, and it was found impossible to suitably accommodate the pupil nurses in the quarters available for them.

Dr Eva W. Mader, who, since her graduation at Dalhousie in 1927, has been on the medical staff of the Nova Scotia Sanatorium, Kentville, has been awarded a Connaught fellowship in the School of Hygiene, University of Toronto. The fellowship is of the value of \$1,500.00. Dr Mader intends to proceed to a degree in Public Health. She is a daughter of Dr A. I. Mader, and a sister of Dr Victor Mader, of Halifax.

On the twenty-fourth of August, Dr W. Sidney Gilchrist (D.M., '27), was designated as a medical missionary by the Pictou Presbytery of the United Church of Canada. The ceremony took place at Pictou, Dr Gilchrist's home town. He has been assigned to Angola, West Africa. Dr and Mrs Gilchrist will spend a year in Portugal, learning the language of Angola, before proceeding to their mission field.

John D. Winclose, who poses as a faith healer, is under arrest at Arichat, charged with an offence against a feeble-minded girl who had been under his treatment for epilepsy.

Action brought by the Federal Department of Health against Rivers Hicks, of Kentville, resulted in the imposition of the minimum fine of \$25.00 and costs. Hicks has been advertising and selling a "cure" for cancer, which, on analysis, was found to be only carbonate of potassium. The charge brought against him was that of selling drugs misbranded, contrary to the provisions of the Drugs Act.

Dr M. R. Young, of Pictou, recently had a narrow escape from drowning. He had crossed the harbour in a motor boat in response to a sick call, and on attempting to board the boat for the return trip he missed his footing and fell into deep water. The doctor does not swim, and, as it was dark at the time, those in the boat had some difficulty in locating and rescuing him.

Dr Victor Mader, of Halifax, recently went by aeroplane to Sheet Harbour, to connect there with a Dominion Government ship which had been ordered to proceed to Sable Island and bring a sick wireless operator to Halifax. Dr Mader, who is a member of the Halifax Aero Club, was accompanied to Sheet Harbour by a fellow aviator, who brought the machine back to Halifax, but the doctor piloted the machine to Sheet Harbour and made the landing there.

Dr R M Benvie, of Stellarton, has gone abroad for six months' graduate study in London and elsewhere

Dr C A S McQueen, of Amherst, has returned from a much enjoyed tour of the British Isles and the Continent

Among those who came to their native province for a holiday this summer were Dr Henry Dickson, of Hilo, Hawaii, and Dr J Clyde MacDonald, of Edmonton

A class of nurses graduated from St. Martha's Hospital, Antigonish, on the fourth of September. The graduates were addressed by Dr W F MacKinnon

QUEBEC

The health survey of Montreal, the greatest work of its kind ever undertaken in the Dominion of Canada, was entrusted to men noted in the world of research, men of experience, discernment, precision, and discretion. These men were provided with an adequate and competent staff under the direction of Dr A. Grant Fleming of the Anti-Tuberculosis and General Health League. The work has involved diligent enquiry and painstaking scrutiny, covering a period of eight months. It was financed by a group of private citizens desirous of contributing to the welfare of the city. When the Metropolitan Life Insurance Company learned of what was being done in this health survey for the benefit of the citizens the directors expressed a desire to print the report and distribute thousands of copies gratuitously. Life insurance companies have a direct interest in increasing the average of the lives of their policy holders, hence their interest in this life survey.

"The United States and Canada lead the world to day in hospital service," said Dr F H. Martin, Director of the American College of Surgeons, prior to making the official announcement of approved hospitals for 1928 at the opening session of the eleventh annual Hospital Standardization Conference. "This is the conclusion reached after eleven annual surveys of the hospitals of both countries by the American College of Surgeons. The right care of the sick and injured has been the slogan of the American College of Surgeons in this work." To the public the announcement of the approved list of hospitals at this season should be one of extreme interest, inasmuch as one out of every ten will need the right kind of hospital care before this time next year. The best assurance for this is in the approved hospital with its ethical, competent, medical staff, adequate facilities for diagnosis and treatment, and competent supervision over all activities. Eleven years ago only 89, or 12.9 per cent, of the hospitals under survey met the minimum requirements for hospital service, as sponsored by the American College of Surgeons and now universally accepted. To day, after eleven years of effort, 1,919, or 69.5 per cent, have attained a place on the honour roll—the official approved list. Eleven years ago the patient remained in the hospital 20 to 24 days, on the average, whereas to day he remains only 12 to 14 days in the same hospital for the same condition. The American College of Surgeons officially announced that the following hospitals in Quebec have been awarded a place on the Fully Approved or Conditionally Approved List for 1928, thus signifying that they have adopted the basic requirements which insure the best care of the patient.

MONTREAL—Alexandra Hospital, 175 beds, Ouldrén's Memorial Hospital, 130, Homœopathic Hospital, 112, Hôpital Sainte Justine pour les Enfants, 300, Hôtel Dieu de Saint Joseph, 400, le Miséricorde Hôpital, 350, L'Hôpital Notre Dame, 300, Montreal Foundling and Baby Hospital, 96, Montreal General Hospital, Central Division, 400, Montreal General Hospital, Western Division 125, Royal Victoria-

Montreal Maternity Hospital, 808, Shriners' Hospital for Crippled Children, 60, all fully approved.

QUEBEC—Hôpital Laval, 260 beds, Hôtel Dieu du Précieux Sang, 252, Jeffrey Hale Hospital, 125, St. François d'Assise Hospital, 100.

SHERBROOKE—Hôpital Général St. Vincent de Paul, 300, Sherbrooke Hospital, 89.

THREE RIVERS—St. Joseph's Hospital, 101.

For the purpose of schooling their own nurses in obstetrics, a new maternity ward has been opened at the St. Justine Hospital. Formerly, it was necessary for a number of nurses to leave at times to go to the Misericorde Hospital in order to study maternity cases. Dr Gaston de Cotret, formerly of the Misericorde Hospital, assisted by Dr A. Groulx, will be in charge. There will be room in Dr de Cotret's ward for about thirty patients. Dr J C Bernard, Medical Superintendent, stated that the St. Justine Hospital is not changing its policy and admits adults as well as children. "The necessity of giving our nurses a proper training compels us to inaugurate this new section," he said. Since the institution was founded more than twenty years ago, 21,434 children have been admitted to the hospital, 2,437 of whom were treated last year.

The Brehmer Rest Preventorium at Ste Agathe des Monts has had such a successful year that more than half their patients have been discharged this autumn after a complete cure following treatment. The Brehmer Rest is non-sectarian, with accommodation for women and children only. Cases of incipient tuberculosis, as well as those recovering from operations and serious illness, are admitted as soon as possible after application is made. The small fee charged by those who can pay does not meet the expenses incurred, but the Preventorium is affiliated with the Federated Charities and, as such, has in many cases carried the whole expense, where a patient is unable to pay. Dr Brehmer founded the first sanatorium in Europe for the treatment of lung disease in 1859 and his name was given to the first Preventorium opened in Ste Agathe in 1913.

That the science of obstetrics should be given more attention by the medical fraternity the world over, and should be regarded as more the work of the general practitioner than that of a specialist, was the opinion advanced by Dr Cyrille Jeannin, Parisian specialist, who arrived here recently to give a course of lectures at the University of Montreal. Dr Jeannin came to Quebec City a short time ago where he lectured at the recent medical convention there. He remained here for another month, then returned to Paris to resume his courses at the Hôpital de la Pitié there. His work here was divided into two sections, clinics and lectures to students in medicine. While here his course was under the auspices of L'Institut Scientifique Franco-Canadien and the University of Montreal. His only public lecture to medical men of Montreal was given at the Cercle Universitaire, the subject being "What is a Doctor?"

The dedication of the Medical Centre in New York, the Diamond Jubilee of the Dalhousie Medical School, and the dedication of the laboratories and hospital of the College of Medicine at Iowa University, are three important medical events that are taking place about this time, and were attended by McGill medical men. Dr C F Martin, Dean of the McGill faculty of medicine represented the university at the dedication of the Medical Centre in New York City, Dr W W Chipman represented McGill at the Diamond Jubilee of the Dalhousie Medical School in Halifax, Dr Campbell Howard will represent the university at the exercises at the University of Iowa, which take place November 15th and 17th.

The 25th anniversary of the founding of the Association of French speaking Medical Men of North America was singularly and brilliantly honoured, at a banquet recently held in the Chateau Frontenac, attended by some three hundred delegates to the Association convention, and a distinguished gathering of civic, provincial and clerical officials. Presided over by Dr P C Dagneau, a prominent Quebec physician and President of the Association, the banquet was featured by an address delivered by the President in which he outlined the progress of the Association, the aims and aspirations of its members, and paid great tribute to the founder of the body, Dr M D Brochu, for his untiring efforts in furthering the ideals of the Association. Dr Dagneau was followed by Dr Brochu himself, who delivered an extremely interesting discourse wherein he outlined the successes and failures of the founders and original members of the Association during the time when the organization was in its infancy, and complimented the executives of the body on the success of the current convention. In reply to Dr Dagneau's toast to the Province of Quebec, following the close of Dr Brochu's address, the Hon Honoré Mercier, Minister of Lands and Forests, and representative of the Government at the gathering, officially greeted the visiting physicians in the name of the Government, and congratulated them upon the advancement in medical science, due mainly to their efforts in the past few years.

The memory of Dr William T G Morton was honoured by members of the Associated Anaesthetists of the United States and Canada in the little Dome Room of the Massachusetts General Hospital in Boston. On October 16, 1846, Dr Morton gave the first demonstration of a surgical operation performed with the use of ether. After a visit to Dr Morton's grave, a bust of the surgeon was presented to the hospital by Dr Francis H McMechan, Secretary general of the Association. The bust was unveiled by Dr William B Howell, of Montreal, President of the Canadian Society of Anaesthetists, Dr Albert H Miller of Providence, R.I., President of the Boston Society, and Dr John H Evans, of Buffalo, N.Y., President of the Eastern Society.

What is described as a fine specimen of African negro art, worth several hundred dollars in the art treasure marts of the world, has been given to the Strathecona Museum of McGill University by Sidney Carter, of Montreal. The gift, which was announced by E L Judah, curator of the McGill museum, is a wooden mask made by African negroes. The striking thing about it is that the facial features are the exact opposite of those of the negro. A small nose, a small mouth, and small ears set far forward on the side of the skull, are the prominent differences in comparison with the typical negro facial and skull structure.

Dr A. K. Haywood, Superintendent of the Montreal General Hospital, was presented with a testimonial from the Royal Canadian Humane Association at the Rotary Club luncheon on September 22nd, in the Windsor Hotel.

Rotarian Canon Shatford spoke of Dr Haywood's conspicuous deed of heroism in rescuing two women, Mrs. Anne Charette and Mrs L. Clarson from drowning in Lake Manitou, on August 17, 1927. The certificate was presented with all Rotarians standing.

Pædiatrists of Montreal held a clinical meeting on November 7th, under the auspices of the Pædiatric Department of McGill University and the teaching hospitals affiliated with the university. The morning was devoted to conferences and in the afternoon living cases were shown. Luncheon was served in the Royal Victoria Hospital and a dinner held in the evening at the Windsor Hotel.

Specially bound booklets, containing one of Sir William Osler's famous addresses, "The Way of Life," were presented to the second year medical students of McGill University by Dr A H Gordon on behalf of Mrs W Grant Stewart, who presented similar booklets to the second year medical students last year. In a short address Dr Gordon paid a tribute to the memory of the late Dr Stewart by whose bequest the booklets were being given, and briefly reviewed the career of Sir William Osler, one of McGill's most famous graduates and formerly a member of the teaching staff.

We chronicle with pleasure an event of more than local interest when we record that there was unveiled in the University Club of Montreal, on September 26th, a portrait of the veteran physician, Dr A. D. Blackader, who is one of the Charter Members of the Club and a Past President. The painting is in the best style of the artist, M Jongers, and depicts Dr Blackader in his scarlet robes as a Doctor of Laws of McGill University.

Dr H S Birkett, whose remarks were very happy, spoke as follows:

"The duty allotted to me this evening is a great privilege and pleasure, the latter however being considerably marred by the absence through illness of our honoured friend Dr Blackader. We all much regret his absence and are glad to learn that he is making satisfactory progress.

"There are but two or three of us here present this evening whose privilege it has been to have been companions in his professional journey for part of the time, and I think that we have been able to watch his career with added interest. Our first acquaintance with Dr Blackader was in the Out Patient Department of the Montreal General Hospital. Here he was to go forward, putting into practice the work of his specialty, the foundations of which had been laid by extensive study in the hospitals of Great Britain and Europe, and in his clinics one saw his application of the humanities, in the care and consideration for his patients in all walks of life. The poor received the same kindly and courtly attention that he gave the rich. In this department of the Montreal General Hospital his knowledge was broadened and deepened and led to the production of scientific and literary work of such a high character that he became recognized as a great leader in his specialty and his efforts were recognized by leading Societies in Great Britain and the United States conferring distinction and honours upon him. These attainments were also recognized in his own country and by his Alma Mater, the latter conferring upon him the honorary degree of LL D. Thus, each milestone of his professional life has been marked by a distinct incident and now the members of the Club have also recognized his service to it as an original member and Past President by having his portrait painted by a very distinguished artist, M. Jongers, which acquisition will long serve to remind us of a kind and courtly gentleman and a beloved physician."

GEORGE HALI

Professor W W Chipman of McGill University, was granted the degree of Doctor of Laws honoris

causa, at the recent convocation of Dalhousie University

Promotions in the Faculty of Medicine at McGill University include the following Dr F H Mackay, from lecturer to clinical professor of neurology, Dr J A Nutter, from lecturer to clinical professor of orthopaedic surgery, Dr H M Little, from assistant professor to clinical professor of obstetrics and gynaecology, Dr J R Fraser, from lecturer to clinical professor of obstetrics and gynaecology, Dr H G Burgess, from lecturer to professor of gynaecology and obstetrics, Dr J R Goodall, from lecturer to clinical professor of obstetrics and gynaecology, Dr J W Duncan, from lecturer to clinical professor of obstetrics and gynaecology, Dr E Hamilton White, from demonstrator to lecturer in otolaryngology, Dr A W Young, from demonstrator in neuropathology to lecturer in neurology, Dr W J Patterson, from demonstrator to lecturer in orthopaedic surgery

Dr J A Wright has been appointed Research Fellow in Pathology in the Faculty of Medicine, and

Dr P J Kearns, Clara Law Fellow in Obstetrics and Gynaecology

Drs R R Fitzgerald, Dudley E Ross, H M Elder, and P G Silver, have been appointed demonstrators in anatomy, while Dr G G Miller, has been appointed an assistant demonstrator in surgery. Those appointed to be assistant demonstrators in pathology are Drs Neil McLeod, John E deBelle, A W Blair, George D L Taylor, P N MacDermot, and G N Paterson Smyth

Major James Stevenson has been promoted to the rank of lieutenant colonel and placed in command of No 6 Stationary Hospital, C.A.M.C., Quebec. During the war, he was officer in charge of the Quebec Military Hospital

Captain A E Lundon has been promoted to the command of No 6 Field Ambulance, C.A.M.C., in succession to Colonel S H McKee, C.M.G., who is appointed to the command of No 6 Reserve Field Ambulance

ONTARIO

The opening meeting of the Academy of Medicine, Toronto, took place on Tuesday, October 2nd. According to the general custom this, the president's meeting, was preceded by the annual dinner, a dinner at which more than two hundred of the Fellows were present. There were many guests, including Sir Samuel Squire Sprigge, the Editor of *The Lancet*, Mr Keyne of Barts, Dr Hugh Thursfield, Sir Robert Falconer, and the chairman of the various hospital boards, all of whom contributed to the dinner by their timely remarks, remarks which dealt largely with the problems of post graduate education in London. Towards the end of the dinner the many friends of Dr Marlow, the President, were delighted to see him appear after his long illness and absence, and were especially pleased that he was able to make a few remarks before leaving. Dr W Warner Jones, Vice president, acted as chairman at the dinner, and presided at the stated meeting, later. After the introductory remarks by the Vice president, Dr H B Anderson, Chairman of the Board of Trustees presented a report which outlined the future policy of the Academy. In this report the Fellows were reminded that the question of a new building would have to be met in the very near future. Details of finance and of building plans were brought forward, and, as the report indicated, it is quite evident that the greatest of the forward steps of this progressive institution is in process of being made. Drs Andrew Eadie, George H Bowles, and George Balmer were elected to Life fellowship. The election of the representatives of the Academy upon the Committee on General Purposes of the Ontario Medical Association took place. The address of the evening was given by Dr Hugh Thursfield, St Bartholomew's Hospital, London, England, who took as his subject, "The thymus gland and so called thymic asthma."

The Section of Medicine met on Tuesday, October 9th. After the chairman's address, the following papers were presented "Relation of the altitude of the sun to its antirachitic effect," by Drs F F Tisdale, and Alan Brown, "Cases of subacute bacterial endocarditis," by Dr Harris McPhedran

District Number Five of the Ontario Medical Association met in Barrie, October 3, 1928. The following program comprised the day's meeting "Factors contributing towards reduction of surgical

failures," by Dr J K. McGregor, Hamilton, "A review of the Medical and Narcotic Drug Acts, with some difficulties arising out of their attempted enforcement," by Dr E A McQuade, Tronton, President of the Ontario Medical Association, "Hypertension," by Dr Geo S Young, Toronto, "Some aspects of the prostatic problem," (lantern slides), by Dr F S Patch, Montreal.

Addresses were also given by Dr R T Noble, representing the College of Physicians and Surgeons of Ontario, and Dr T C Routley, Secretary of the Ontario Medical Association

A short business session was held at which Dr W A Lewis of Barrie was nominated Counsellor of the District for the ensuing year, and Dr S W Otton of Newmarket was elected Vice counsellor. Considerable interest was displayed in the problem of the drug addict, and a resolution was passed with the unanimous approval of the meeting, memorializing the provincial government to provide adequate hospital accommodation for drug addicts, and also to make provision for their committal thereto

It was the unanimous opinion of all those present that this meeting was a decided success and one of the best ever held in the District

Little by little the general plan of the new St Michael's Hospital is taking form, and this splendid institution, the equal of any of its size in Canada, is appearing as a compact new building able to accommodate six hundred patients. The latest addition, a seven story building, is fireproof, and with its light halls, bright wards, well equipped diet kitchen is unsurpassed. It is a remarkable addition to Toronto's hospital accommodation. There are no fewer than seventy five private rooms, and almost an equal number of semi private, and in connection with them there are eight operating rooms, together with a new emergency ward and its equipment. The broad minded attitude of the trustees and managers is seen in the generous provision for laboratories, a whole floor is given over to the x ray department, and another floor is provided for the clinical laboratories, which to an observing eye seem as complete in their equipment and as extensive in their space as any of the best on the continent. When one adds to this detail the fact that these laboratories are under the supervision of a

pathologist such as Dr Magner, one realizes that St Michael's is determined to maintain its high standard of efficiency. With its equipment, with its professional staff, and with its capable and managing sisterhood, St. Michael's in its new surrounding stands far forward in the ranks of Canadian Hospitals. N B Gwyn

The Ontario Neuro Psychiatric Association will meet at the Psychiatric Hospital, Toronto, on November 16th. A business meeting will be held from 5 to 6 o'clock and papers, clinical demonstrations and discussions will begin at 8:30 p.m. G C Kinn, Secretary

MANITOBA

The epidemic of poliomyelitis, which began in Winnipeg in July, reached its peak in August and spread to other points in Manitoba, but by the end of the first week in October it had subsided, and it is expected that few if any further cases will be reported for the balance of the year. Up to October 7th, 395 cases were reported, 250 from Winnipeg and 145 from other Manitoba points, with a total of 28 deaths. The Winnipeg schools which were to have opened on September 4th did not open until October 1st. Convalescent serum was used extensively, with excellent results if given before the onset of paralytic symptoms. Great praise must be given to the Medical Research Committee, which directed the collection and distribution of serum, and to the Winnipeg Medical Society, which was responsible for calling an emergency meeting of the profession and appointing a committee that prepared valuable articles on the diagnosis and treatment of the disease for the public press. The work of these two bodies created a certain feeling of security in the minds of the lay public and prevented any panic. The Medical Research Committee is now engaged in preparing a report on this epidemic and the effect of convalescent serum therapy and this report when presented will undoubtedly be of considerable value. By months the number of cases reported and the deaths are as follows—

	Winnipeg		Rural and Suburban Manitoba	
	Cases	Deaths	Cases	Deaths
July	9	3	1	0
August	79	9	21	4
September	154	7	111	5
Oct 16	8	0	12	0
(inclusive)	—	—	—	—
Total	250	19	145	9

It should be borne in mind in connection with the deaths assigned to Winnipeg that these may include non residents of the city who were brought to city hospitals for treatment.

The contract for the building of the first wing of the Deer Lodge Military Hospital, on the outskirts of Winnipeg, was awarded on September 21st, the estimated cost being \$131,571. The wing will be built on the east side of the present building and will provide wards for bed patients. It will be three storeys in height and will have a recreation floor on the roof.

On October 2nd, at the Metropolitan Theatre, Winnipeg, and under the auspices of the Winnipeg Medical Society, Dr James Miller, Director of the Richardson Laboratories, Queen's University, Kingston, showed the

The department of Anatomy of the University of Western Ontario, London, has been re organized by its Professor and Chief, C C Macklin, FRSC. Dr H Alan Skinner, M.B. (Tor), has been appointed Assistant Professor of Anatomy, and E N Ballantyne, B.A., M.D., M.Sc., Carl G Smith, B.A., and W K Welsh, M.B. (Tor), are full time instructors. The part time instructors are H M Simpson, M.D., M.Sc., FRCS (Edin), Hermann E Schaef, M.D., Leonard W Pritchett, M.D., R A Johnston, M.D., H O Foucar, B.A., M.D., and Madge Thurlow Macklin, A.B., M.D. (Johns Hopkins). Messrs Calder, Gilchrist and Rogers are student assistants.

intensely interesting Canti film. This film which has been presented by Dr R G Canti to the Canadian Medical Association, depicts normal cell reproduction and the effects of radium on cancer cells. A large audience was present.

At the regular monthly meeting of the Winnipeg Medical Society, held on September 21st, Dr N J Maclean presented a paper on "Tumours of the upper left abdomen," Dr Geo V Bedford spoke on "Thallium therapy in ringworm of the scalp," while Dr M J Ormerod discussed "The pharmacology of thallium." Dr A. W. S. Hay was elected to membership.

The seventeenth annual meeting of the Canadian Public Health Association was held in the Royal Alexandra Hotel, Winnipeg, on October 11th, 12th, 13th, with Dr Geo D Porter, of Toronto, presiding.

The Winnipeg Health League, under the able leadership of Dr H M Speechly, has prepared an imposing list of speakers to address audiences during the coming winter and spring. The subjects to be presented cover a wide field and fall into three groups: (a) to parents and adults interested in child training, (b) to general audiences, and (c) to adolescents. The addresses will be given not only at meetings directly under the auspices of the Winnipeg Health League but to service clubs, women's organizations, and others, and in addition radio talks of one half hour duration will be given.

In the Manitoba University Alumni Golf Tournament, held at Southwood on October 5th, Dr W D Mann won the men's low gross score. The low net ended in a tie between Dr G S Fahrni and W A Lendal of Law. Medicals won the inter faculty team match. The ladies low gross score was won by Mrs (Dr) G B McTavish.

Dr C W Duncan has opened an office in Winnipeg.

The contract for the building of Mount Carmel Clinic at Austin Street and Selkirk Avenue, Winnipeg, has been awarded. Ross Mitchell.

At the last meeting of the Executive of the Manitoba Medical Association, the following were appointed to the Editorial Board of the Canadian Medical Association Journal, as representing Manitoba: Dr Ross Mitchell, (Chairman), Dr H M Speechly, (Secretary), Dr C R Gilmour, Dr L D Collin, Dr J D McEachern.

SASKATCHEWAN

Dr R O Davison, Director, Division of Communicable Disease, Department of Public Health, Saskatchewan, addressed the regular monthly meeting of the Regina and District Medical Society, September 5th, on "Immunization and serum treatment." This interesting and instructive paper provoked much discussion.

Dr M M Seymour then addressed the meeting on "Health districts in Saskatchewan." A summary of this is found elsewhere in this *Journal* (p 598). The meeting expressed its appreciation of the work done in the province in disease prevention by the department and hoped to co operate in this work.

Dr W A Dakin was elected a delegate to the annual meeting at Prince Albert. Dr H H Mitchell was appointed representative to the executive of the Saskatchewan Medical Association for the coming year.

The Society recommended to the Junior Red Cross committee that a doctor be appointed as house physician to the Junior Red Cross Hospital.

The epidemic of poliomyelitis in Manitoba was discussed with a view to preparedness in case the disease spread to the Regina district. The meeting passed a resolution requesting the Department of Public Health to get the consent of patients or of the parents of junior patients who have had poliomyelitis to collect blood for the purpose of manufacturing convalescent serum if it is found necessary.

Dr Harvey Agnew, Associate Secretary of the Canadian Medical Association and Secretary of the Department of Hospital Service, addressed the Annual Meeting of the Regina and District Medical Society, which was held on October 4th.

Dr Henry gave a short résumé of his trip to Europe, where he visited the different men engaged in x ray and therapy work in the various centres, London, Manchester, Edinburgh, Paris, Munich, Vienna and Berlin, and attended the Second International Radiological Congress in Stockholm.

Among the interesting work seen was that of Dr Beclère, of Paris, who kindly demonstrated intra uterine technique, with the use of lipiodol under pressure, and illustrated his cases with lantern slides.

A very interesting and instructive week was spent at Vienna, under the supervision of Dr Schuller. At the Convention at Stockholm a few of the many interesting cases were mentioned, special stress being placed upon the papers which gave a description of treatment of psoriasis, and also the treatment of asthma by x rays.

Before proceeding to the business meeting the members rose and observed a moment's silence in honour of the late Dr F J Ball who had been a former president of the society.

Dr B C Lecch was appointed house physician to the Junior Red Cross Hospital, Regina.

The matter of a Victorian Order nurse for Regina was discussed briefly and left for the incoming officers to deal with.

Dr S E Moore, Treasurer, gave his report, which was accepted. The election of officers resulted as follows:

Hon President, Dr M M Seymour, President, Dr R O Davison, First Vice president, Dr W A Dakin, Second Vice president, Dr R R Roger, Secretary, Dr P L Strath, Treasurer, Dr S E Moore, Executive, Drs J C Black, J B Ritchie, S Kraminsky, W A Harvey, and G H Sahlmark.

The President, Dr H H Mitchell, gave a short review of the very satisfactory year's work. There were ten regular meetings and three meetings visited by

post graduate teams. He thanked the members for their active and harmonious support.

P L STRATH

The third annual convention of the Saskatchewan Health Officials' Association was held at Saskatoon on October 9th at the King George Hotel.

After the President's address, by Dr H C Burroughs, of Swift Current, the following scientific papers were given: "Restricted areas for tuberculin testing, and their relation to public health," by Dr C J Johannes, Veterinary Inspector, Health of Animals Branch, Dominion Government, "Inspection of food places," by Mr H G Buck, Food Inspector, City Health Department, Saskatoon, "How foods are tampered with," by Mr E G Southon, Sanitary Officer, Swift Current.

In the afternoon the following papers were read: "The relation of the sun to general health," by Dr John Orr, Saskatchewan Anti Tuberculosis League, "Public health nursing," by Miss Ruby Simpson, R N, Assistant Director, Division of Public Health Nursing, Department of Health, Saskatchewan, "Communicable diseases," by Dr R O Davison, Director, Division of Communicable Diseases, Department of Public Health, Saskatchewan, "Problems of the rural health officer," by Dr A O Rose, M H O, Hafford, "Some of the difficulties of the part time health officer," by Dr J H H Jackson, M H O, North Battleford, "The city medical health officer," by Dr W R Coles, Regina.

The round table discussion at 4:30 p.m. was led by Dr Arthur Wilson, M H O, Saskatoon.

After dinner addresses were given by Hon J M Ulrich, M.D., Minister of Public Health, by Dr M M Seymour, former Deputy Minister of Health, now Special Adviser on Public Health to the Saskatchewan Government, and by Dr MacLeod Harris, Chief of Laboratory and Hygiene, Department of Pensions and National Health, Ottawa.

At the business meeting which was held in the evening the officers for next year were elected as follows: Patrons, His Hon Lieut Governor H W Nowlands, Hon J G Gardner, Premier, Hon J M Ulrich, Honorary President, M. M. Seymour, M.D., D.P.H., President, J H H Jackson, M.D., M.H.O., North Battleford, Vice President, W R Coles, M.D., M.H.O., Regina, Executive Ruby M Simpson, Regina, Paul McElmorle, Regina, W H Orme, M.D., Saskatoon, D R Davies, M.D., MOIL, Estevan, B M Bayley, M.D., M.H.O., Moose Jaw, R G Ferguson, M.D., Fort Qu'Appelle Sanatorium, H C Burroughs, M.D., M.H.O., Swift Current.

Speakers from Saskatchewan at the Canadian Public Health Association Convention held at Winnipeg, on October 11th, 12th and 13th, were Dr Arthur Wilson, M.H.O., Saskatoon, on "The authority of the medical officer of health in his own community," R H Murray, Director, Division of Sanitation, Department of Public Health, Saskatchewan, on "The Control of public milk supplies," Dr F C Middleton, Acting Deputy Minister of Health, Saskatchewan, on "The movement toward full time Health units in Saskatchewan" and "The periodic examination as a public health measure," Miss Marion Landeburgh, R N, on "Health teaching in high schools."

The following Saskatchewan representatives were elected on the Executive Council: Dr Arthur Wilson, Saskatoon, Dr J H H Jackson, North Battleford, Dr F C Middleton, Regina.

Dr H H Hepburn, F.R.C.S., of Edmonton, and Dr W H Merritt, of Calgary, toured Saskatchewan in October giving post graduate lectures to the local societies. They were guests of the Regina General Hospital at lunch on October 19th, at which time they spoke on "Encephalitis" and "The surgical treatment of neuritis." At the evening meeting, after a dinner at the Hotel Saskatchewan, Dr Hepburn spoke on "Treatment of head injuries," and Dr Merritt spoke on "Peptic ulcer." They were accompanied by Dr A MacG Young, Secretary of the Saskatchewan Medical Association.

The School Hygiene Branch of the Department of Education was organized in April, 1917, with a staff which has gradually increased to fourteen nurses. All of the 4,770 organized districts have been visited by

school nurses, some of them have been visited four or five times. Correction of the remediable defects by the family physician has been vigorously sought. The teaching of health in the schools has been carried on. Saskatchewan was the first province in Canada to introduce health education in the Normal Schools, directed by public health nurses with teaching backgrounds.

On May 1, 1928, the School Hygiene Branch of the Department of Education was transferred to the Department of Public Health, and, associated with the nurses who are already in the Department of Public Health, will in future be known as the Division of Public Health Nursing. The object of merging the two branches was to unify the service and avoid duplication of effort. A plan of generalized public health work has been arranged with special districts allotted to each of the sixteen nurses now in the field.

ALBERTA

The September meeting of the Academy of Medicine, following the summer vacation, was held at the summer residence of the President, Dr J F Folinsbee seven miles from Edmonton centre, overlooking the Saskatchewan River. Some sixty of the members of the Academy were present and a discussion took place in reference to (1) the report of the committee on the proposed Medical Arts building in the city, similar to that already established in the city of Winnipeg, (2) the disposition of the library of the Academy of Medicine, the final decision here being made to make a gift of it to the Medical Library of the University of Alberta, the books to be available for the use of all medical men of Alberta. Following the meeting a very enjoyable buffet luncheon was served in the billiard room, a most enjoyable time being spent partaking of the hospitality of our genial President.

Dr G E Swallow has recently been appointed Assistant Medical Inspector of Schools, on part time, by the Edmonton School Board. T. H. WHITELAW

In the new form of Application for Registration in Alberta, provision is made for a certificate of character from registrars in other districts where the applicant has practised. The idea is that Alberta is no longer the "wild and woolly west" to which a man may go after conducting himself in a manner unworthy of his profession, and expect to be received with open arms. Alberta intends that future registrants who are "wanderers" shall show good reasons for their acceptance.

The following have just registered in Alberta: Dr Robert Fraser Stewart, Coleman; Dr Arthur Wychiffe Scott, Calgary; Dr Harold Warnica Price, Calgary; Dr Elgar Emrys Evans, Calgary.

Through the courtesy of the Canadian Medical Association Dr Canti's film, "Growth of Tumour Cells in Vitro" was exhibited in the Palace Theatre, Calgary, by Prof James Miller of Queen's University, Kingston. In addition to the local medical men, the following were invited to view the film, newspaper

editors, dentists, druggists, the legal profession, the Ministerial Association, school teachers, and nurses. The theatre was well filled and general delight and approval was manifested by all.

Calgary regrets exceedingly that one of the "real old timers" in the practice of medicine should have been transferred to Vancouver, in the person of Dr R. D. Sanson, and the fact that his new appointment is a promotion only lightly affects the general feeling of regret.

Dr E A Johnson, a recent graduate of Alberta University, has purchased the practice of Dr De Beaupré, of Fort Saskatchewan, and is already at work.

Dr Edward G. Hollies, of Edmonton, has taken over the practice of Dr Huckell at Waskatenau, the latter going to the University Hospital as assistant to Dr Mewburn in orthopaedic surgery.

Dr H. C. Swartzlander has disposed of his practice in Oyen and is moving to Calgary. Dr S. R. McGregor, formerly of Red Deer, is succeeding him.

Dr W. W. Nasmith, of Sylvan Lake, suffered a severe loss in the death of his wife recently, and his many friends extend their heartfelt sympathy to him at this time.

Dr James Kennv, of Retlaw has just returned from a three months' internship in Buffalo Hospital, and is intending to remain in Alberta.

Dr George R. Johnson, Registrar, has gone to Halifax to attend the 75th Anniversary of the Nova Scotia Medical Association. He will give a lecture on early medicine in Alberta. On his way to Halifax he will do some post graduate work.

Dr Katherine M. Hick, M.R.C.S. Eng., has accepted an appointment in the Municipal Hospital, Oronoway, Alta. W. G. HUNT

BRITISH COLUMBIA

The winter session of the Vancouver Medical Association was opened on Tuesday, October 2nd, with papers by Dr J J Mason on "Genital prolapse," and "The technique of version" by Dr W B Burnett. The first of the season's business meetings was held prior to the scientific papers. The report of the Summer School, held in June, 1928, was given by the Chairman, Dr H R Stoors, who reported a substantial balance to the credit of the School in the funds of the Association. Dr Wilfrid L Graham and Dr R P Kinsman were elected to serve on the committee of the Summer School for the next three years. Assistance has been rendered to the committee during the past three years by the Canadian Medical Association in supplying some of the speakers. For 1929 it is possible the committee may adopt a different policy, with regard to obtaining speakers in other ways. Eight new members were elected by the Association, Drs A M Agnew, E E Day, W L Graham, W H Hatfield, C T McCallum, D M Meekison, H R Mustard, and J Eden Walker, bringing up the total membership to 221.

Several of the younger members of the Association have recently formed a reading society under the proposed title of "The Osler Society of Vancouver." Meetings will be held monthly, and at each meeting two papers will be given, the discussion on which will be led by one of the older members of the Association who will be invited to attend the meeting. It is hoped that free discussion will lead to full attendance at each meeting.

It is anticipated that the new Private Ward Wing of the Vancouver General Hospital will be opened in the near future. Furnishing is now under way and the new beds will probably be ready for occupation earlier than was anticipated. The new maternity wing is also nearing completion.

In view of the pending amalgamation of the adjoining municipalities with Vancouver, and the consequent changes that will be necessary in the Health Department, the Vancouver Medical Association, on a motion by Dr A S Monro, recently appointed a committee to make a public health survey of the proposed greater city of Vancouver. The committee is busy investigating and a full report is promised for the November meeting of the Association.

The fourth extra mural post graduate tour through out British Columbia has just been completed and it will be interesting to the Canadian Medical Association and the Sun Life Assurance Company to know that it was an unqualified success. Lectures were given at Cranbrook, Grand Forks, Kelowna, Vancouver, Chilliwack, Nanaimo, Victoria, Prince Rupert and Prince George. Outside the larger centres of Vancouver and Victoria tremendous mileage was covered by the doctors in their anxiety to attend the meetings, and this, plus the enthusiasm and the keen appreciation of the addresses must have been gratifying to the distinguished speakers selected for us.

It was indeed an honour to have Dr A T Bazin and Dr A H Gordon, of McGill University, and Dr Gordon Bates, of Toronto, with us. Dr Theo H Lennie, Vice-President of the British Columbia Medical Association and Dr Howard Spohn accompanied the speakers on their tour. The annual meetings of the East Kootenay, West Kootenay and Okanagan Medical Societies were held concurrently with the

post graduate meetings. Dr F W Green, of Cranbrook, was elected President of the East Kootenay Society, Dr H H McKenzie, of Nelson, President of the West Kootenay, and Dr A L Jones, of Revelstoke, President of the Okanagan Medical Society.

Dr W L Graham and C H Bastin have been appointed the representatives for British Columbia on the Editorial Board of the Canadian Medical Association.

We welcome home our Executive Secretary, Mr C J Fletcher, who has just returned from the Mayo Clinic and hope he will soon be his genial self once more.

Dr W E Tiffin of Kimberley has taken over the practice of Dr D Wannop, Nanton, Alberta.

Dr J A Ireland has been appointed Medical Officer at Atlin, B C.

Dr C R Marlatt has resigned the position of Medical Superintendent of the Powell River Sick Benefit Society, effective on December 1st. Dr Marlatt, who has been practising in Powell River for the last nine years, will continue there in private practice. Dr A S Underhill is acting as his assistant.

W L GRAHAM

Dr J A Stewart, eye, ear, nose and throat specialist, of Victoria, is now en route to Vienna, where he will do post graduate study in his specialty.

Dr F M Bryant of Victoria is now back in practice, following a successful operation.

Dr E M Casey of Montreal and Dr J R Langley of Harvard are now at the Royal Jubilee Hospital, Victoria, as internes.

The Victoria Medical Society held a dinner on September 7th, when Dr A T Bazin and Dr A H Gordon of Montreal, and Dr Gordon Bates of Toronto were the guests of honour, and addressed the members. Dr Bazin dealt with "Some diseases of the gall bladder" and Dr Gordon read a paper on "Nephritis" following which Dr Bates addressed the society dealing with the control of venereal disease when he was able to show convincingly the magnitude of the problem confronting the profession. On September 8th, Dr Bazin addressed the members after luncheon at the Union Club his subject being "Varicose veins." In the evening Dr Gordon read a paper on "Digitalis therapy" and Dr Bazin dealt with "Inguinal hernia." Dr Gordon Bates showed some very interesting lantern slides. At the close of this evening a vote of thanks was passed to the three visiting speakers on motion of Dr George Hall. The Society was very fortunate in having two days so pregnant with instruction and was especially grateful to Dr Gordon Bates for giving two public lectures on "Preventive medicine." These lectures were well attended. The arrangements were carried out by Dr M G Thomson who is now in British Columbia organizing and carrying on the program of the National Social Hygiene Council.

C H BASTIN

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A Gift for Radium

A gift of \$100,000, from Col Louis J Kolb, of Germantown, has been received by the Graduate Hospital of the University of Pennsylvania and the Department of Radiology of the University's Graduate School of Medicine. It is intended for the purchase of a gram of radium and the accessories for use in the treatment of cancer. About \$72,000 will be required for the purchase of the radium, and the balance will be applied to the expenses involved in the special chemical and medical work. Col Kolb's gift is the second to be received by the University within the last ten months for the control of cancer, Mr. I DuPont having donated \$45,000 last December. As a result of Mr DuPont's gift a study of the physico-chemical conditions associated with the cancer state is being made, under the direction of a committee consisting of Drs Ellice McDonald, W C Sefriz, and Dean Meeker.

Sir Robert Philip

Sir Robert Philip, of Edinburgh, who established the first Tuberculosis Dispensary in 1887, and developed the Edinburgh System of Tuberculosis Control, was awarded the Trudeau Medal at the recent annual meeting of the National Tuberculosis Association. Sir Robert is the first foreign physician to be so honoured.

National Tuberculosis Association

At the annual meeting of the National Tuberculosis Association, held recently in Portland, Ore, Dr Eugene L Opie, of the Henry Phipps Institute, Philadelphia, was elected President, and Dr Ray W Matson, of Portland, Vice President.

New York Academy of Medicine

The Bulletin of the New York Academy of Medicine for August contains the list of the recent Harvey Exhibit, planned and arranged by Dr Archibald Malloch, Labramian, and shown in the library of the Academy.

GENERAL

Medical Council of Canada

At the recent examinations of the Council, held in Montreal and Winnipeg, the following candidates were successful: A Aubry, Lancaster, Ont, C G Bain, Tofield, Alta, M M Band, Fredericton, NB, D M Baltzan, Brooklyn, NY, A W Blair, Regina, F W Boyd, Winnipeg, J L Brown, Regina, R F Brown, Toronto, J B Cramer, Westbrook, Ont, P E Doyle, Hawkesbury, Ont, J R Forrest, Montreal, R Gottheb, Vienna, Austria, N L Higginbotham, Lethbridge, Alta, L Jordan, Winnipeg, R H Kinsman, Toronto, S W Leske, Seattle, Wash, K M Lind say, London, Ont, Muriel MacLennan, Westmount, H McKenzie, Dungannon, Ont, E M McLean, Port of Spain, Trinidad, R B Michener, Wichita, Kan, J Mindess, Winnipeg, J A Murison, Kindersley, Sask, F J Murphy, Red Deer, Alta, E B Potts, St Thomas, Ont, E Poutontaine, St Pierre, Man, E L Reid, Scotland, A Scharf, Moose Jaw, L Sinotte, Ottawa, D Stredig, Flora, Ont, J B Thompson, Orono, Ont, J G Toombs, Mt Stewart, P.E.I., W M Wallace, Toronto, J F Whitworth, Vancouver, J W Walton, Ayr, Ont.

These physicians are now registered as of date October 12, 1928.

Professor v Muller

The seventieth birthday of Geheimrath Prof Friedrich v Muller, of Munich, who, it will be remembered, visited Canada some twenty years ago and lectured in various cities, was celebrated on September 19th. The auditorium of the Second Medical Clinic in Munich was too small to accommodate the crowds of his former students and his friends who flocked there. Professor Martin spoke on behalf of the students, words of admiration and affection, and presented a bronze bust by Weckbecker, subscribed for by the students. Professor Staehelin, of Basel, spoke for the old pupils and the Medical Faculty of Basel, presenting Prof v Muller with a beautiful casket containing photographs of former students and friends. The Minister of Education, Herr Goldenberger, represented the Bavarian Government and Dr Schupfer, the Rector, spoke for the University of Munich.

Prof v Muller thanked the various speakers feelingly and in appropriate terms. His word to the physicians was—to keep themselves always free and independent.

Book Reviews

Diseases of the Gall Bladder and Bile Ducts. Evarts Ambrose Graham, A B, M D, Warren Henry Cole, B S, M D, and others. 477 pages, 224 illustrations. Price \$5.00 net. Lea & Febiger, Philadelphia, 1928.

The main reasons given in the preface for the publication of this book are "the growing realization of the frequency and of the importance of diseases of the biliary system" and the fact that "no comprehensive discussion of this subject has appeared in the English language since Rolleston's classical work was published in 1905."

Both of these are thoroughly sound but the authors rather lay themselves open to criticism for gross exaggeration when they state that "approxim-

ately 40 per cent of our adult population have disorders of their biliary systems." If all other causes of ill health were added to this high percentage, it is amazing how the work of the world can be carried on as it is. Possibly the enthusiast in his subject may be excused to a degree for being carried away in this way, as well as for the prominence which is given throughout the book to cholecystography, for the discovery of which the author is responsible.

In a general way, the objective of giving a systematic outline of biliary diseases has been very successfully accomplished. The complete review of the recent advances and researches fills a much needed place in the book literature on this subject, about one third of the book being devoted to experimental

An ECHO of
THE ANNUAL MEETING OF THE C.M.A.
at CHARLOTTETOWN, JUNE, 1928

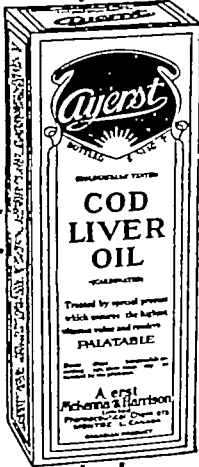
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NOVA SCOTIA MEDICAL BULLETIN, AUGUST, 1928

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THE CANADIAN MEDICAL ASSOCIATION JOURNAL

and clinical cholecystography and to the discussion of the various tests of hepatic function

In discussing the anatomy of the biliary system, the importance of the lymphatics is fully described and excellent plates show the variations in the arteries and ducts of the biliary tract. The authors have succeeded in presenting a fair evaluation of the present knowledge of the functions of the gall bladder, but no mention is made of the normal relation of the flow of the bile into the duodenum in its relationship to the cycle of digestion, overlooking the fact that the biliary is an accessory part of the alimentary system.

The chapters on symptoms and clinical diagnosis are entirely inadequate in a work that professes to cover this whole subject. The practitioner will gain little help in the diagnosis of disorders of the biliary tract, as the descriptions of their characteristic features. Resort is made to quoting statistical frequency of certain symptoms, but the clinical course of the many types of cases that occur receives little attention. One is almost forced to the opinion that the bedside study of cases has failed to interest the authors to the same degree as the laboratory research work and the literature. The discussion of visceroptosis, spastic constipation, and intestinal allergy, but as duodenal and gastric ulcer and carcinoma, and lesions of the appendix and kidney. The clinical differences in the pathological processes that simulate chronic cholecystitis and cholelithiasis have failed to find a place.

The surgical treatment is well described and illustrated, but the practitioner receives but few suggestions in the methods of handling cases before they reach the stage when operation is clearly indicated.

The book is well published and the illustrations are well reproduced. More pictures of pathological gall bladders and the types of gall stones, with fewer of laboratory tests, would have filled a much needed want. The book as a whole will prove an exceedingly useful one for both the student and practitioner, more especially from the point of view of the recent experimental investigations that have been conducted. It will help to fill the gap between 1905 and the present, but still leaves room for an author of wide clinical and pathological experience and an appreciation of research, to write an evenly balanced monograph on this increasingly popular subject.

E G RYERSON

Epilepsy Medicine Monograph No XIV William G Lennox and Stanley Cobb 197 pages, illustrated Price \$3.50 Williams & Wilkins Co, Baltimore, 1928

The scope of the book has been carefully confined to "the presentation of evidence which may throw light on the mechanism involved in seizures and on the cause and treatment."

The authors first give briefly and clearly the different theories commonly held as to the neurological mechanisms of convulsions. The next and major portion of the work is devoted to a consideration of the different factors which may or may not cause convulsions. The last section contains a short review of modern methods of treatment. These three aspects condensed, but adequately discussed, within the compass of some one hundred and fifty pages. The authors have evidently reviewed the existing literature very exhaustively and have presented the evidence for varying views and theories, including their own, concisely and clearly.

servatively and impartially. The very large and complete bibliography attached to the work allows the reader to take advantage of what has quite evidently been a very careful and laborious search of the literature. Each section is closed with a short summary of the matters discussed therein and this together with the fact that the book is written in clear concise English enables one to read it in one evening without that sense of fatigue that is so often experienced when perusing medical literature.

New and Nonofficial Remedies, 1928. Published by the American Medical Association, Chicago Price \$1.50

No official pharmacopœia can be expected to deal with all the additional remedies which are continually appearing. And yet it is well known that many of these remedies are of great value. It is also well known however that many remedies offered for sale have little or no value. It is to fill the gap in the official viewpoint regarding these two classes of remedies that the Council of Pharmacy and Chemistry of the American Medical Association publish each year a volume which lists and describes the articles accepted by them as worthy of recognition. There is an illuminating section devoted to "articles described" but not accepted.

The book is valuable also in its revision and bringing up to date our knowledge on substances in common use such as arsenic compounds, barbitals, digestive enzymes and iron compounds, serums, and vaccines, glandular preparations, etc. It has also been necessary to add new material in the articles on medicinal foods and ergot preparations.

The book is extremely useful and contains information which the general practitioner will frequently require and which he can obtain nowhere else.

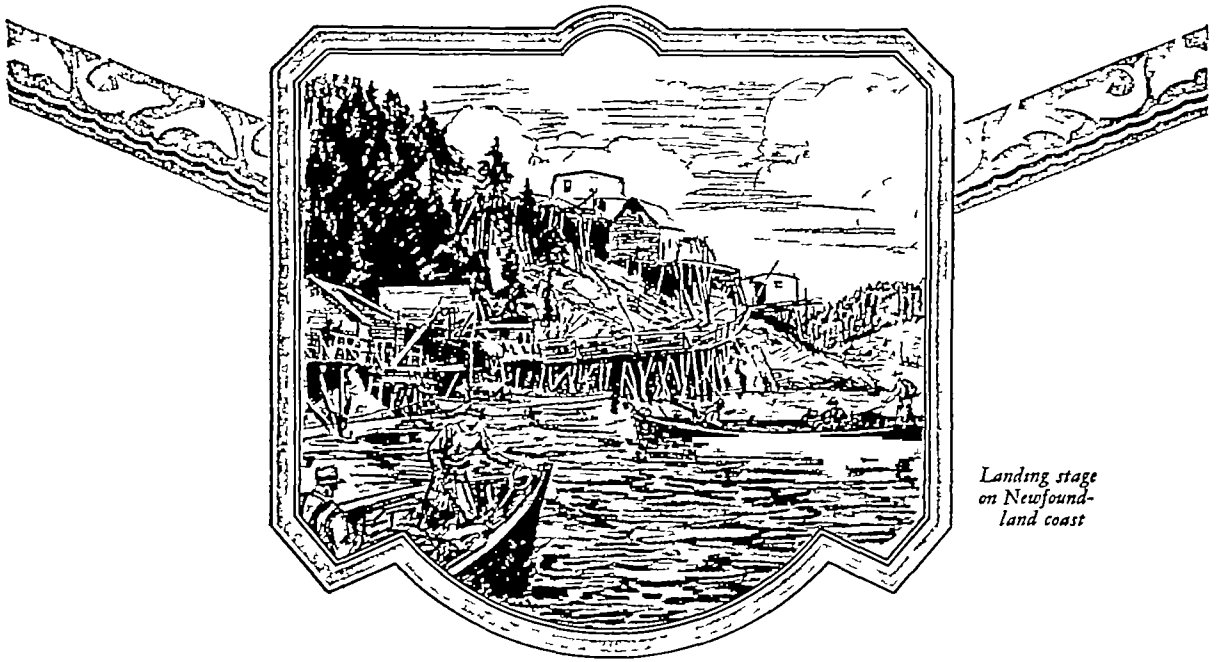
H E MACDERMOT

Preventive Medicine Mark F Boyd, M.D., M.S., C.P.H., Member of Regular Field Staff, International Health Division of the Rockefeller Foundation Third edition, revised, 475 pages Illustrated, \$4.50 London and Philadelphia, W B Saunders Company, Toronto, McAlinsh & Co, 1928

That a volume such as this should have reached a third edition, in which all recent advances are recorded, is most satisfactory indeed, for it proves that the medical profession is taking a deeper interest in public health than ever before. Dr Boyd has gathered together from many sources the main facts relating to preventive medicine, and has set them down concisely and clearly, so that medical men may have access to them quickly and easily. In the changing public sentiment of the past decade it is becoming very obvious that practitioners must take the lead in all fields of prevention, or it will pass into other hands.

This book is as complete as one could wish. Should one desire to follow any particular subject in more detail, there are abundant references at the end of each chapter. The illustrations, unlike those in many other text books, are original and exceedingly instructive, particularly those relating to occupational diseases and food infections. The chapters on malaria and yellow fever are also considered and are worthy of mention, but the rarer infections such as undulant fever are also considered. If there is any fault to be found with the book, it is that many things are set down in table form, and the appearance of a compendium. But in the space allotted it is not possible always to retain the narrative, and undoubtedly the tabular method of presentation makes the work more valuable for reference.

F A CLARKSON

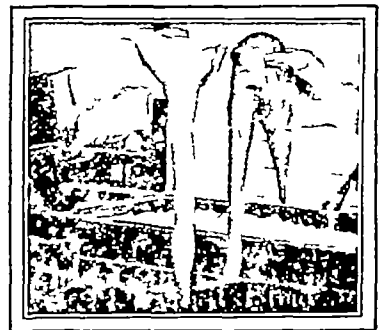


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Lectures on Internal Medicine Knud Faber, M.D.
147 pages, 43 illustrations Price \$3 00 Paul B Hoeber, New York, 1927

The etiology and pathogenesis of achylia gastrica is the title of the Nathan Lewis Hatfield Lecture given before the College of Physicians of Philadelphia

The intestinal origin of pernicious anemia was the presentation of Faber's well known investigations in this disease to the annual meeting of the American College of Physicians at Detroit

Benign glycosæmia was the subject of the Herter Fund Lecture at Baltimore, and the Harvey Lecture at the New York Academy of Medicine was an historical outline of medical therapy

Faber's lectures on clinical subjects should be read by every physician who did not have the opportunity to hear him or who is not conversant with his views on the subjects discussed by him. The Harvey lecture, with its well chosen illustrations, is a most interesting presentation of the history of medical therapy J H ELLIOTT

Lectures on Medicine and Surgery New York Academy of Medicine First series, 1927 319 pages, 39 illustrations. Price \$5 00 Paul B Hoeber New York, 1928

The lectures appearing in this volume represent the series delivered at the New York Academy of Medicine in 1927 for the general practitioner. It is a collection of general interest. Fifteen in all, they cover a wide range of subjects, cardio vascular and cutaneous syphilis, otological infections, eye conditions, general infections, contagious diseases, intestinal obstructions, surgical aspects of goitre and of medical conditions, useful drugs, the treatment of pneumonia, climate in tuberculosis, obstetrical problems, human misconduct, and the child's first year. The lectures have been given by outstanding teachers and clinicians. The book is published in Hoeber's best style, is easy to read, and can be recommended as presenting the best of recent medical thought as concerns the subjects under discussion. We think the profession in general will appreciate the work of the Academy's Committee on Medical Education

J H ELLIOTT

Collected Papers of the Mayo Clinic and Mayo Foundation. Edited by Mrs M H Mellish and H Burton Logie, M.D. 1330 pages, illustrated Price \$13 00 Philadelphia and London, W B Saunders Co., Toronto, McAlinsh & Co., 1928

This volume, as its name indicates, represents the various papers and addresses delivered by members of the Mayo Clinic and the Mayo Foundation during 1927, and published in many American and Canadian medical journals during 1927 and 1928, and here assembled in one volume. A vast amount of material is represented in this collection, however, only those which are of greatest importance, or which make most practical appeal, are here published in full, the others by title and reference only.

One cannot fail to be impressed with the vast amount of clinical material available for investigative and statistical purposes, and no less so by the research attitude which makes for such excellent work in the different departments.

No matter what the specialty, there are few pages that will not repay perusal. It would be only natural to expect, however, that one would most appreciate the sections which more directly affect his particular sphere of activity. Even allowing for this, it seems reasonable that one should single out from their excellent fellows for their particulars excellence, the papers on gastric and duodenal conditions, those on the biliary system, on renal malignancy, and suprapubic prostatectomy.

The biliary system is dealt with from its physiological and pathological aspects, having in mind its

clinical application, and constitutes a distinct step forward in the clarification of some of its more obscure phases. The papers on cholecystography and its limitations will be found to be decidedly helpful, as setting a better standard by which to evaluate the results of the Graham test, and by virtue of the deductions made from this investigation, they who have experienced the necessity for proceeding to surgery in the presence of strongly suggestive clinical findings and negative Graham test will be confirmed in their action.

Regarding the paper on "Punch prostatectomy," we confess to a feeling of disappointment in that no very definite conclusions are given as regards the indications and contra indications of this procedure in the treatment of prostatic obstruction. The concealed knife, the cautery and the electro coagulating apparatus are all advocated, but the reader is left in doubt as to which type of instrument is preferred.

The matter is well arranged, so as to appeal to workers in all the main branches of medicine, with even some reference to dentistry, and the discussion of general subjects of the final section gives the collection a finishing touch which can scarcely be over valued. E V HOGAN

Gonococcal Urethritis in the Male for Practitioners P S Pelouze, M.D. 357 pages, illustrated Price \$5 50 London and Philadelphia, W S Saunders Co., Toronto, McAlinsh & Co., 1928

This book has been written for the purpose of conveying to the general practitioner the experiences which the author has found satisfactory in the diagnosis and treatment of acute urethritis. The first part is taken up with a study of the gonococcus, the lesions produced in the urethra and adnexa, and the modes of infection. The early and late symptoms, together with the methods of diagnosis and treatment, are taken up in detail in such a way that the reader will find a great store of small practical hints which will be very useful. The treatment outlined does not include a number of alternative treatments, to the confusion of the student, but is the one which Dr Pelouze has found of value in a large series of patients.

The chapter on the prostate includes a great many practical details of examination for diagnosis and slides of the normal and abnormal secretion. The treatment of each stage of acute and chronic urethritis is taken up in detail, together with the complications. In a special chapter devoted to non gonorrheal urethritis, stress is laid on the fact that it is more prevalent than most people realize.

The second part of the book gives an analysis of a series of patients which presented a wide range of common and uncommon complications. A critical analysis of treatment is included and should be of great value as a reference for the management of difficult cases. This monograph is a splendid effort as an outline of diagnosis and treatment of gonorrhea, by a man who has had great success with it over a period of many years. J C McCLELLAND

The Opium Problem. Charles E Terry, M.D., and Mildred Pellens. 1042 pages. Published by the Committee on Drug Addictions New York City, 1928

This volume will be invaluable to the research worker who is interested in the medico social problem of chronic opium intoxication, because the authors have made available a digest of the work that has already been done in this field. They chose the title, *chronic opium intoxication*, in preference to *addiction*, *disease*, *appetite*, *habit*, *craving*, etc, hoping that this designation would be sufficiently comprehensive to cover the different phases of the condition. The Committee on Drug Addiction has completed a biblio-

Note for the Medical Profession

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graphy of over six thousand items, the greater part of which is considered of little or no value (a tremendous waste of good Canadian pulpwood!) Some four hundred contributions were considered worthy of analysis

It may surprise some to learn that De Quincey's "Confessions of an English Opium Eater" (1841), according to the authors, had far reaching effects, and even to day its pernicious effects are felt. The consensus of opinion of the writers cited is that the origin of the majority of cases of chronic opium intoxication lies in the therapeutic use of the drug, but one is cautioned to balance that against the fact that there is an incompleteness of data. Until the pathological changes have been studied and are understood no rational treatment can be applied. Some of the authors stress the difficulty of diagnosis, especially when the patient is in "perfect balance." A contracted pupil may or may not be present. No satisfactory explanation of the withdrawal symptoms has been given. There is unanimity of opinion that the manufacture of heroin should be prohibited. Nearly one half of the volume is devoted to the study of international, national, state and municipal control. The Harrison Narcotic Law has many variations for the physicians, and if Canadian physicians wish to obviate the necessity for such a law they should become more familiar with the provisions of the Federal Opium and Narcotic Drug Act.

The index is rather meagre, but this is compensated for by the bibliography. J W CRANE

The Extra Pharmacopœia Vol. I. W. Harrison Martindale, Ph.D., Ph.Ch., F.C.S., and W. Wynn Westcott, M.B., D.P.H. Nineteenth edition. 1207 pages. Price 27/6 net. H. K. Lewis & Co, London, W.C.1, 1928

A modern official pharmacopœia has at best a limited range, and there is a great necessity for something else which will include all the miscellaneous information which exists regarding drugs and their employment. The "Extra Pharmacopœia" is designed to meet this necessity. It has done so for the last forty five years, and judging by the frequent revision which it undergoes (this volume is the 19th edition) there is reason to expect that it will continue to do so for years to come.

The present edition has taken advantage of the various new editions of national pharmacopœias which have appeared in the United States, Germany, France and Sweden within the last three years. In addition to this, however, it possesses the feature which has always been outstanding in its completeness, that of abstracting the current literature over a very wide field of knowledge. It is a very unusual point on which the Extra Pharmacopœia fails to furnish some information. It is, however, on the matter of recent advances in therapeutics that one looks for guidance in new editions, and no advance of note has been omitted here. The treatment of pernicious anemia with liver, recent work on vitamin D, the use of ephedrin in asthma, recent developments in organo therapy (though still with the admission that endocrinology is far from being an exact science), discussion on lead therapy in cancer, lack of consensus of opinion on the value of tuberculin on which there is "no consensus of opinion", these are a few of the points noted.

The book is indispensable as a fully, carefully edited, and convenient index. H. E. MACDERMOT

Ernest Harold Baynes Naturalist and Crusader Rymond Gorges. 255 pages, illustrated. Price \$4.00. Houghton, Mifflin Co, Boston, 1928

There are men whose work is not easily classified and Ernest Harold Baynes is one of them. He was a lover of animals, of flowers and wild life, and a writer of stories and a lecturer, but while he was a naturalist he had no university degrees in biology or botany, and he cannot be classed among leading modern authors.

But, he was one of those rare men whose character and charm of personality carry them through life without any of the guiding influence (sometimes cramping) of a professional training. If he was a very delightful dreamer of dreams he was also possessed of a keenly practical and well ordered mind, capable of impressing President Roosevelt to the extent of setting in motion the legislation by which the practically extinct bison was preserved and brought to the present increase of numbers, both in the United States and in Canada.

From this work he turned to the preservation of wild bird life, and this gradually absorbed his whole time. It was as a kind of climax to his years of lecturing and writing that he eventually asked a friend to write a poem for the occasion of opening a bird sanctuary at Meriden, and so occasioned the production of the masque "Sanctuary."

Shy and diffident he may have been, but he could be roused to passionate outbursts by cruelty to animals. In one of his denunciations of the trade in plumage as ornaments he said, "I do not pretend to know God, as these women who wear upon their heads the plumes of slaughtered birds claim to know Him, but if I wore such emblems of heartless vandalism on my brow, I would not have the impudence to get down on my knees and ask any favours of Him!" And again, on seeing displayed for sale one of the "Chanticleer Bow" ornaments, which had been suggested by Rostand's play, "I could hardly believe my eyes, and I looked again to make sure it was nothing less than the head of that world famous songster, the European skylark."

'Hail to thee, blythe spirit,
(Bird thou never wert),
That from heaven, or near it,
Pourest thy full heart'

Shelley's lines ran mockingly through my head, as I looked at that pathetic tiny bunch of brown feathers, with its staring glass eyes and its shrivelled bill—all that was left of the most joyous, joy giving bird that ever sprinkled the air with its songs. And the price of it, bow and all, was fifty cents! And for a tithe, then, of this paltry sum, there had been destroyed such beauty, such poetry, such joy, as could not be replaced by a syndicate of billionaires.

But even his affection for animals could not sway him into the senseless fanaticism of the anti vivisectionist. He examined the question of animal experimentation at first hand, and his investigations soon showed him what irrational and hysterical methods the anti vivisectionist worked. Far from gaining his support the anti vivisectionists found him an uncomfortably vigorous and capable opponent.

This biography manages, though with no particular literary skill, to give a picture of one with a lovable nature, a clear brain, and indomitable courage in fighting the battle of those who not only cannot fight us but should never receive anything but our admiration and affection. H. E. MACDERMOT

Sterility in Women Diagnosis and Treatment. Sidney Forsdike, M.D., B.S., F.R.C.S. 133 pages, 25 illustrations. Price 9/- net. H. K. Lewis & Co, London, 1928

This little book might seem to be a work of supererogation in these days of so called "advanced news." But there is still some demand for the solution of this problem, and Dr Forsdike handles the question admirably. He starts out with a definite plan of campaign, which is followed step by step to the end, unless he finds the solution sooner. And one very pleasing feature is that his plan, if he does not easily find a solution in the female side, is to shift over to the male, and make him prove his fertility, before subjecting the female to the later and more distressing parts of the examination.

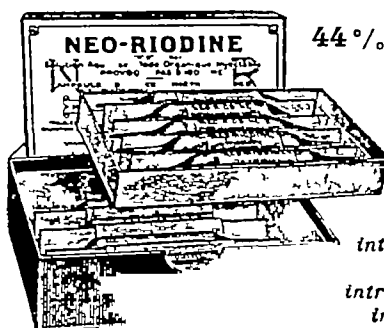
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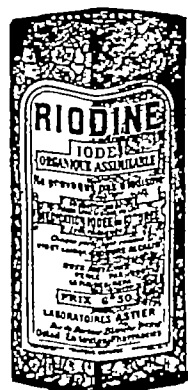
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Methods and Uses of Hypnosis and Self Hypnosis
Bernard Hollander, M.D., M.R.C.S., L.R.C.P. 191 pages Price 6/ net George Allan & Unwin Ltd, London, W.C.1, 1928

It is stated on the cover that this book will be of interest to medical and psychological experts. Most medical men and psychologists would regard the book as a popular one, and would consider the introduction of such subjects as premonitions, apparitions, clairvoyance, telepathy, the human aura and the like, as being irrelevant DAVID SLIGHT

The Examination of the Central Nervous System.
Donald Core, M.D., F.R.C.P., Honorary Assistant Physician, the Manchester Royal Infirmary, 248 pages, 14 illustrations Price \$2.75 Edinburgh, E & S Livingstone, Canada, MacMillan Co of Canada, Toronto, 1928

To the student of medicine, to the neurologist and to others interested in the examination of the central nervous system, this will prove to be a very interesting book. As the title implies, it deals simply with the routine examination of the central nervous system and correlates some of the more common pathological signs and symptoms under the appropriate categorical syndromes.

In the main the author has not diverged from the average text book on this subject, except in the latter chapters where the nervous disorders are considered from a chronological, congenital, and mode of onset point of view A. W. YOUNG

Diseases of the Intestines Including the Liver, Gall Bladder, Pancreas and Lower Alimentary Tract.
Anthony Bassler, M.D., F.A.C.P. 905 pages, 199 illustrations Third edition Price \$10.00 F. A. Davis Co, Philadelphia, 1928

This volume is one of a series of works on present day medicine published by F. A. Davis Company. It is the third edition of this work and compares favourably with previous editions, having in addition new articles on diseases of the liver, gall bladder and pancreas. The general form of the book is pleasing, the illustrations satisfactory although the x-ray pictures could be clearer.

A considerable portion of the volume is devoted to the functions and methods of examination of the intestinal tract. Some of the examinations detailed are laborious and unnecessarily meticulous. The author appears to be favourably impressed with the Meltzer-Lyon test and has evolved some laborious tests to be done on the pancreatic juice obtained by duodenal tube. No mention is made of the starch tolerance test. Over seventy-five pages are devoted to the subjects of putrefaction, indicanuria and intestinal auto-intoxications while one or two pages suffice for Evarts Graham's work on cholecystography.

Aside from these minor discrepancies the sections on other subjects are admirably written and up to date. The section on constipation might perhaps be more emphasized, that most common of present day ailments, the spastic colon, receiving but a few lines. The book is interesting, written from the practical gastro-enterologist's standpoint rather than the academic, and will no doubt be of much value to the physician.

E. W. MONTGOMERY

A Shorter Anatomy With Practical Applications
Wolff, M.B., B.S., F.R.C.S. 451 pages, 130 illustrations Price 18/ net H. K. Lewis & Co, London, 1928

This book is described by the author as "A Shorter Anatomy." All well intentioned attempts to

shorten descriptions in human anatomy would be heartily welcomed by students, but one cannot quite fathom the purpose of this author in shortening anatomy by omitting such important organs as the brain, the heart, the lungs, etc. The section allotted to the thorax deals only with its surface anatomy. The author has not attempted to describe the regional anatomy of the thorax at all. It is therefore rather puzzling to determine what is the exact purpose of the book, and to which constituency it is intended to make a special appeal. If, as the author claims, "the book is especially intended for those revising their anatomy for the final examinations," how can this claim be substantiated, when the book does not cover the whole of the regional anatomy of the body?

The book is written apparently by a surgeon anatomist, which explains the fact that much space is allotted to applied anatomy. This constitutes an attractive feature of the volume. The author has attempted a semi-systematic, semi-regional plan of description. It is difficult, however, to understand why he should have decided to give an account of the courses of the nerves and blood vessels prior to a description of the muscles, which are such deciding factors in the relationships of these structures. Similarly, in the abdomen, the discussion of the peritoneum should be placed before the description of the viscera, instead of at the end.

The section on ossification and epiphyses is the best in the book, and is illustrated by some excellent diagrams.

A few errors and omissions can be detected. For example, on p. 257 the word "stomata" is misspelt. Again, in the distribution of the deep branch of the ulnar nerve given on p. 16, the short muscles of the little finger are left out.

The book is printed in large clear type, and is excellently bound, but the illustrations are on the whole disappointing. Some of them are rather crude, and others are too much overburdened with detail—a confusion of vessels, nerves and tendons in black outlines. The descriptions are attractively written and very readable, and there is a useful and comprehensive index. JOHN CAMERON

Lee's Microtome's Vade-Mecum. Edited by J. Bronte Gatenby, M.A., Ph.D. (Dubl.), B.A., B.Sc., D.Phil., D.Sc., etc., and others. 710 pages, 9 illustrations. Price \$7.50 P. Blakiston's Son & Co, Philadelphia, 1928

As a reference book on methods employed in microscopical anatomy in the various branches of biology this work is very well known. In this new edition there has been an enlargement of the embryological, cytological, protozoological and entomological sections. New sections have been added by Dr. Robert Chambers and Dr. W. R. G. Atkins. The protozoological section has been rewritten by Dr. Helen Pixell Goodrich, and Dr. Greenfield has added new material to the sections on the nervous system.

This work has passed through numerous editions with considerable increase in material and a broadening of its scope. As a handbook of reference it has considerable value and forms a valuable aid to the laboratory worker. Methods are often given with considerable brevity, but references to the original articles are placed conveniently in the text after the author's names. In the chapters which cover subjects with which the reviewer is particularly familiar he feels there is a tendency to include many old and useless methods which could well be omitted, and thus allow more space for the better, well recognized techniques which are generally employed.

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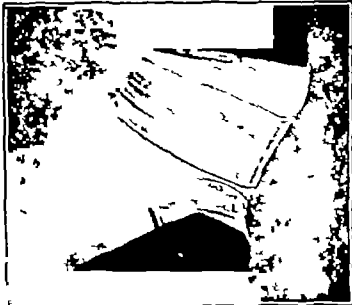
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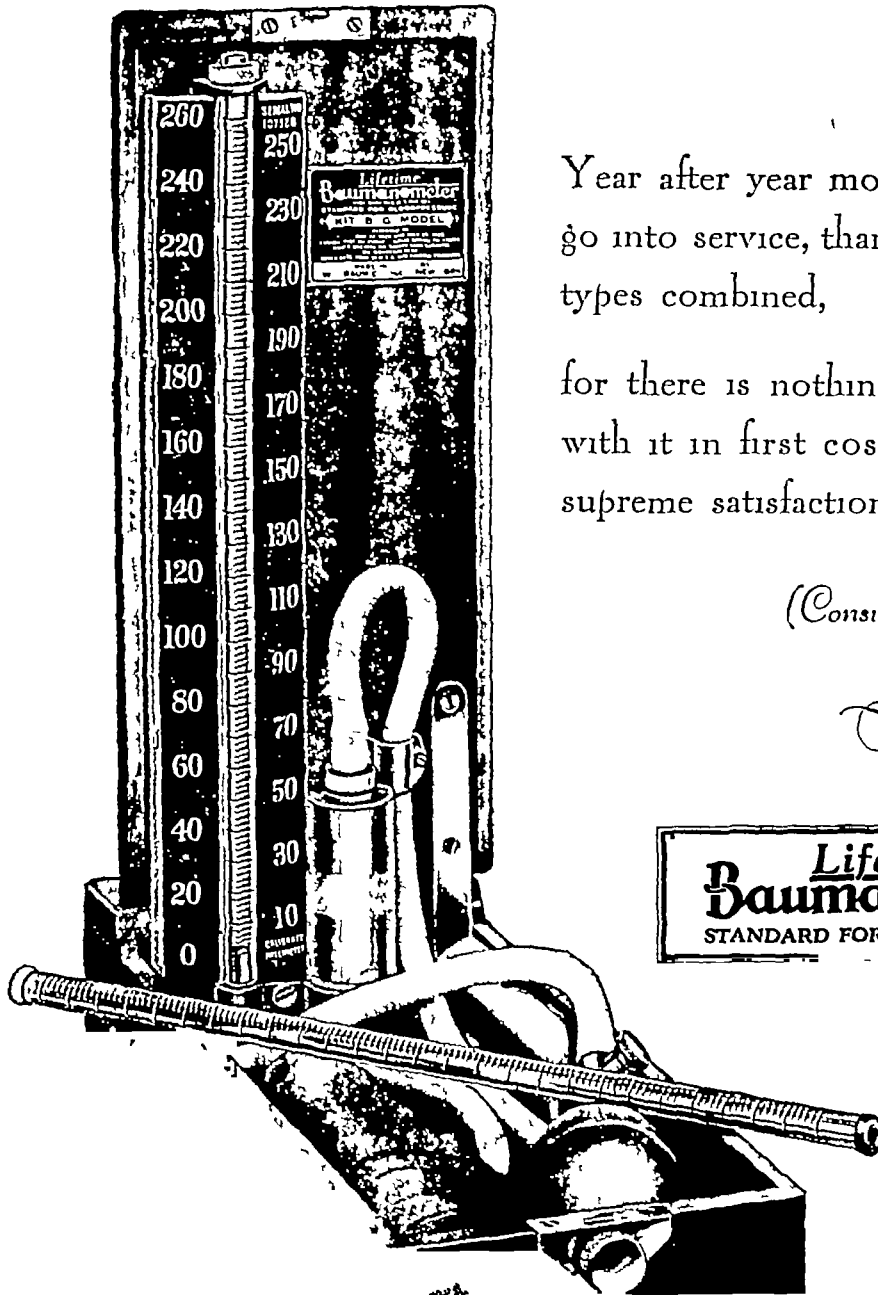
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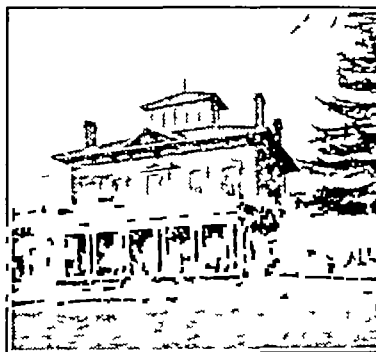
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Ophthalmology	Nov 12 to Dec 1—Royal Westminster Ophthalmic Hospital Afternoons and 1 morning Fee £4 4s 0d
Proctology	Nov 12 to Nov 17—St Mark's Hospital. Fee £3 3s 0d
Urology	Nov 19 to Dec 1—St Peter's Hospital Afternoons Fee £5 5s 0d
Venereal Diseases	Nov 5 to Dec 1—London Lock Hospital. Afternoons and evenings Fee £3 3s 0d

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Dermatology	Dec 3 to Dec 15—Blackfriars Skin Hospital Afternoons Fee £1 1s 0d
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Practitioners' Course	Dec. 3 to Dec 15—London Temperance Hospital Late Afternoons 1½ hrs Fee £1 1s 0d

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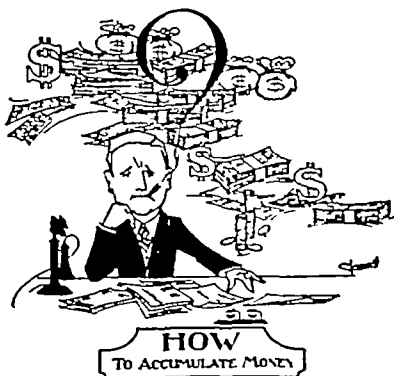
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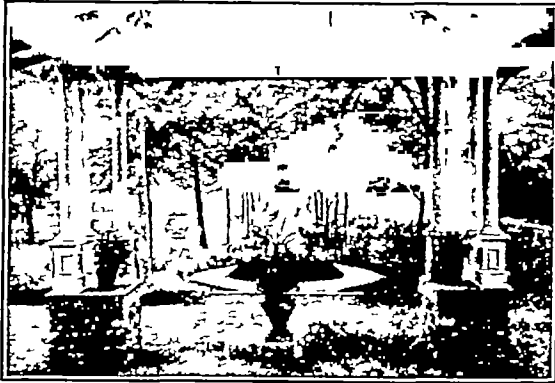
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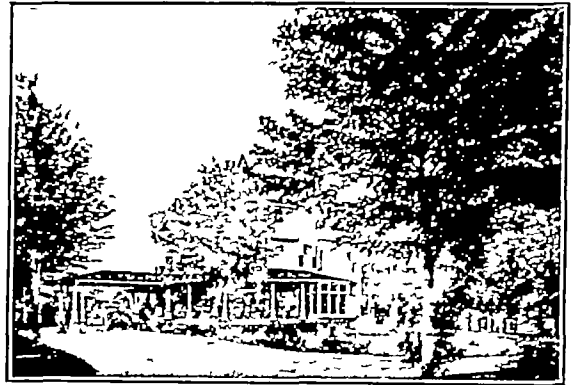
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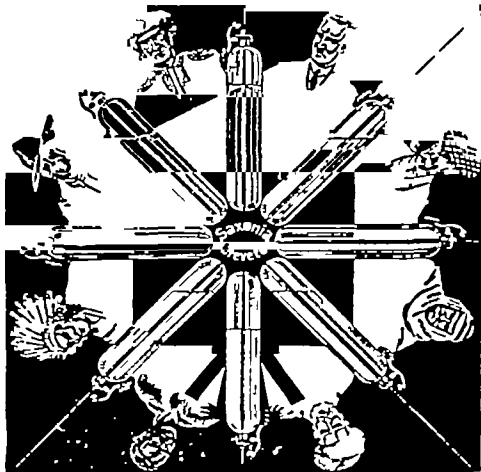


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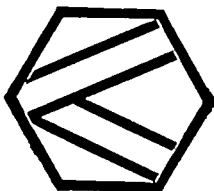
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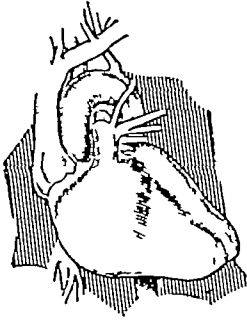
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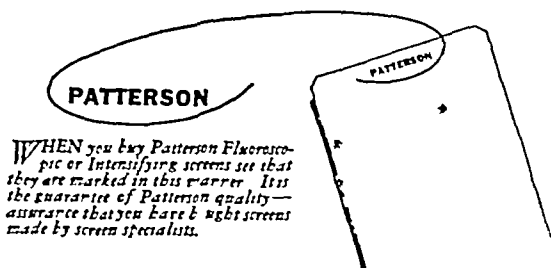
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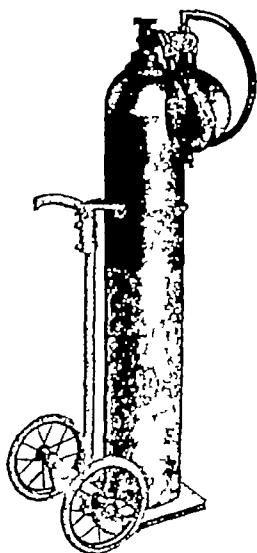
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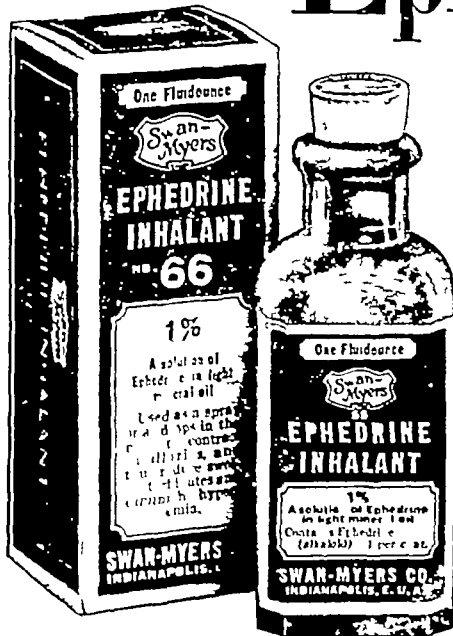


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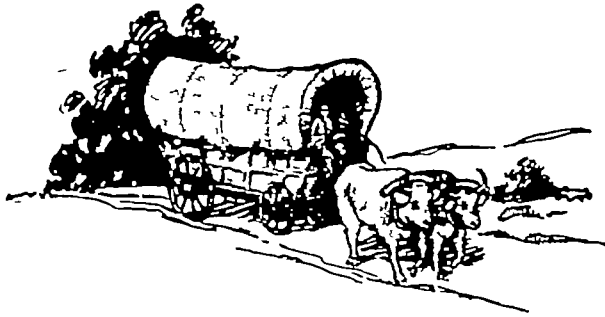
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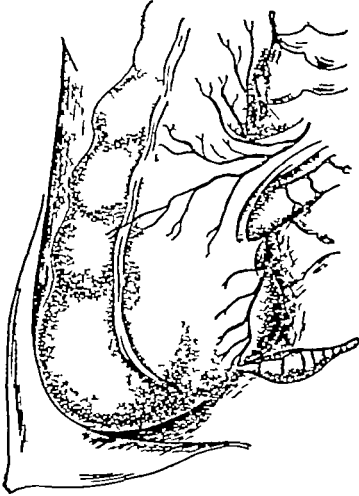
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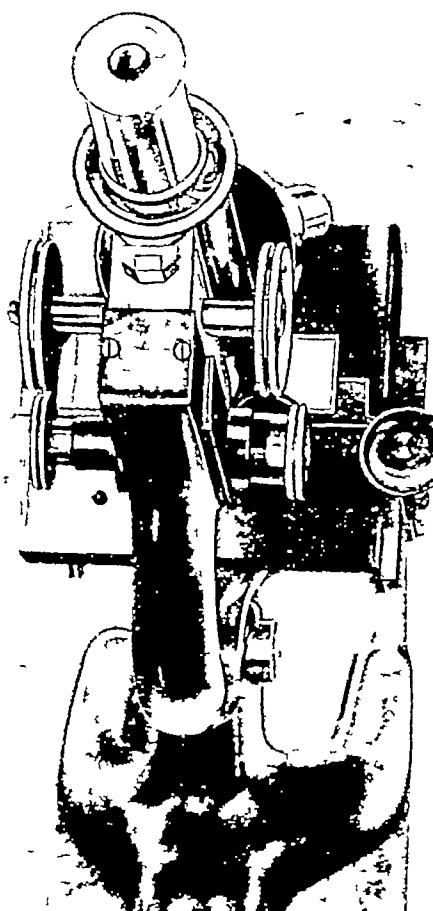
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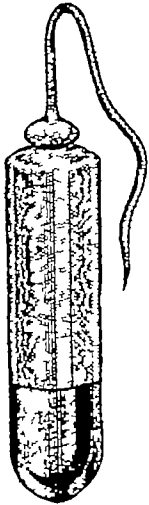
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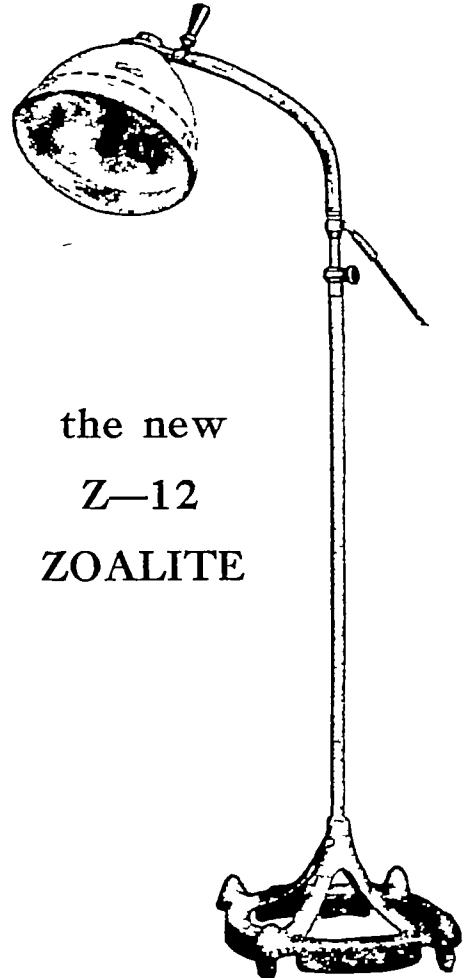
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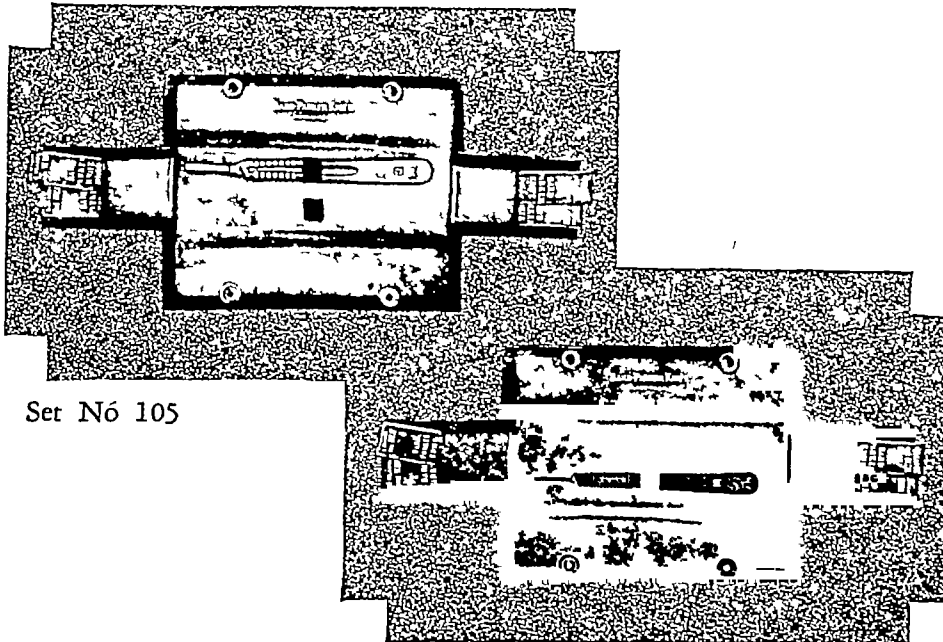
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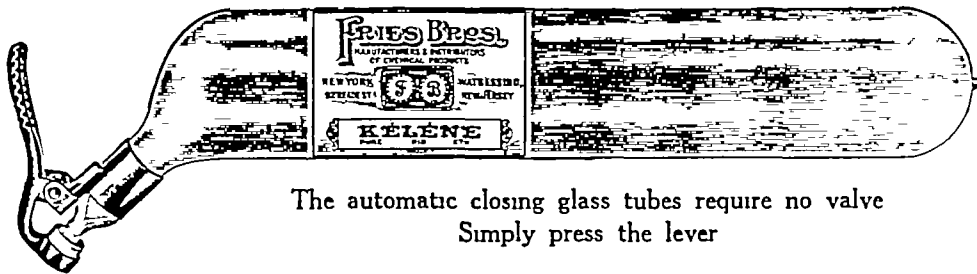
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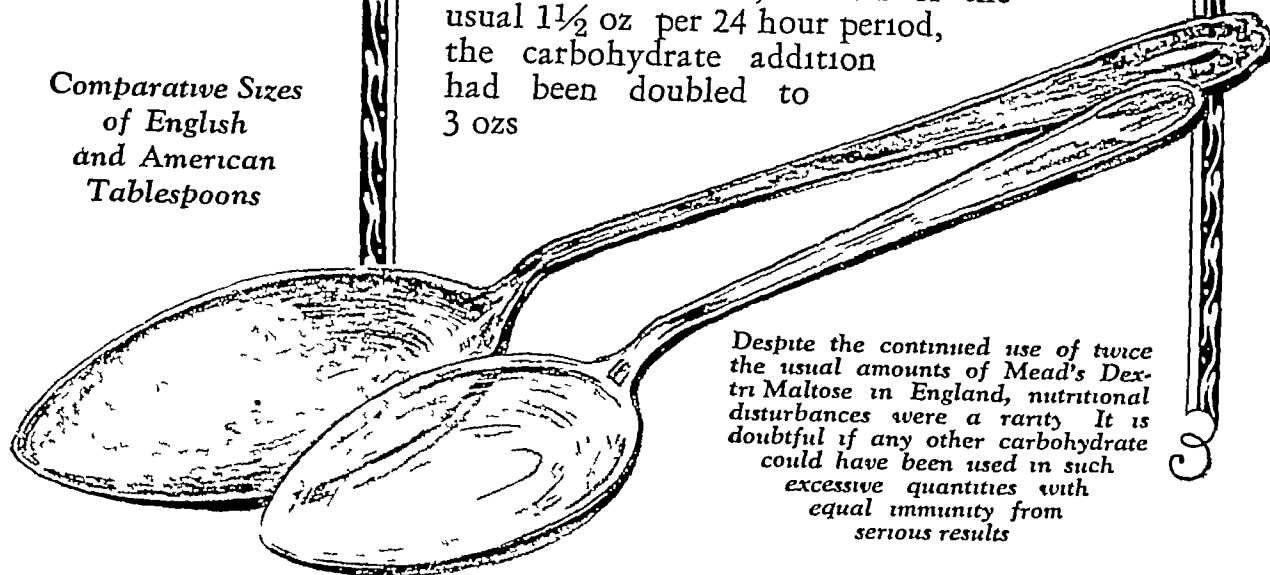
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A candidate for examination must deliver to the General Secretary of the Canadian Medical Association prior to April 1, 1929, for transmission to the Secretary of the Royal College of Surgeons, the following certificates

- 1 Of matriculation at a "recognized University",
- 2 Of having completed the examinations in Anatomy and Physiology for degrees in Medicine and Surgery of a "recognized University",
- 3 Of having dissected in a "recognized" Medical School or Schools during six terms or eighteen months,

Note—Dissections during the regular vacations will be accepted provided the certificate shows that they have been performed under the superintendence of an authorized teacher in a recognized Medical School

- 4 Of having attended in a "recognized" Medical School or Schools —
 - (a) a course of lectures on Anatomy during two terms,
 - (b) a course of lectures on Physiology during two terms,
 - (c) a course of Experimental Physiology,

Note—It is meant that the learners themselves shall individually be engaged on the necessary experiments manipulations etc but it is not hereby intended that the learners shall perform vivisections

- (d) a course of Chemical Physiology,
- (e) a course of Histology

The fee for examination or re-examination shall be \$100 00

The Final Examination for the Fellowship is held only in England and candidates for admission to that examination must have passed the Primary Examination and hold the Diploma of Member of the Royal College of Surgeons of England or have held for not less than four years a degree of a recognized University registrable on the Medical Register of Great Britain.

For further information apply to —

General Secretary
Canadian Medical Association
184 College Street
Toronto 2, Canada

Secretary
Royal College of Surgeons
(or) Lincoln's Inn Fields
London, W C, England

* The exact date will be announced on this page in later issues



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tion. The Atlantic Medical
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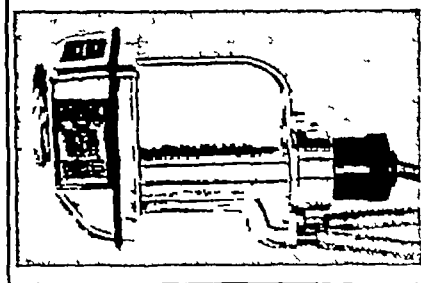
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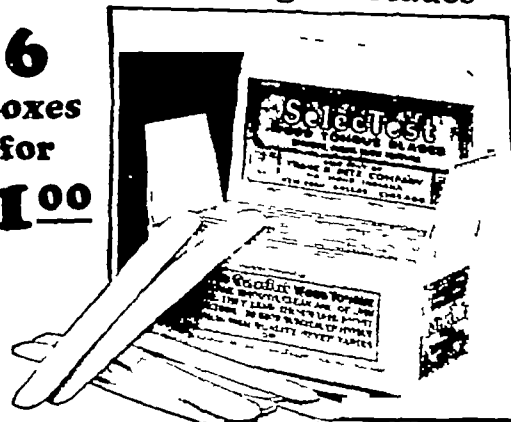
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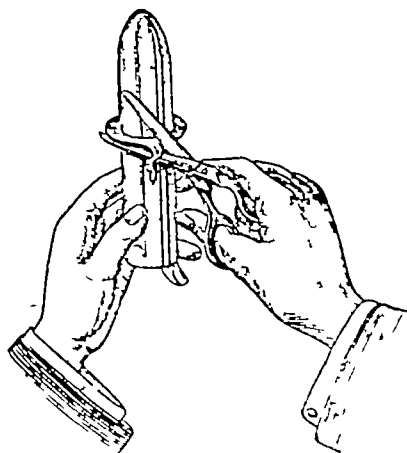
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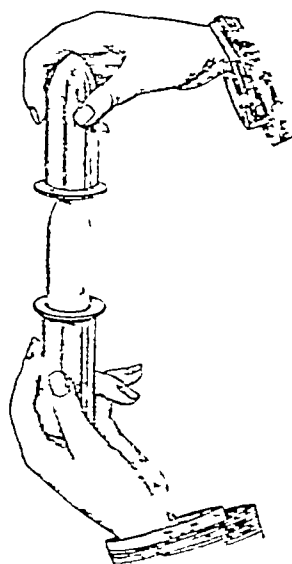
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The Association

BUSINESS REPORT OF THE FIFTY-NINTH ANNUAL MEETING OF THE CANADIAN MEDICAL ASSOCIATION HELD IN CHARLOTTETOWN, P E I

June 18-23, 1928

THE first session of Council of the Canadian Medical Association, for the annual meeting of 1928, was held in The Prince of Wales College, Charlottetown, P E I, on Monday morning, June 18th, at 10 30 o'clock. The following members were in attendance —

Doctors G H Agnew, Toronto, L J Austin, Kingston, Gordon Bates, Toronto, A T Bazin, Montreal, G S Cameron, Peterborough, W N Cochran, Mahone, J W Crane, London, G R Cruickshank, Windsor, J D Curtis, St Thomas, G F Dewar, Charlottetown, C A Donkin, Bridgewater, F J Farley, Trenton, W M Fisk, Montreal, J G FitzGerald, Toronto, A G Fleming, Montreal, Duncan Graham, Toronto, J F Haszard, Kimberley, Geo Hall, Montreal, T G Hamilton, Winnipeg, J S Hart, Toronto, W B Hendry, Toronto, E V Hogan, Halifax, W P Hogarth, Fort William, J C Houston, Charlottetown, S R Jenkins, Charlottetown, T M Leask, Moose Jaw, T H Leggett, Ottawa, J Ross Millar, Ottawa, H B Moffatt, Ottawa, L R Morse, Lawrencetown, J H Mullin, Hamilton, H H Murphy, Kamloops, A R Myers, Moncton, J K McLeod, Sydney, H McLean, Regina, H E MacDermott, Montreal, J G MacDougall, Halifax, J B McKenzie, Chatham, J R Nugent, St John, John Oille, Toronto, G R Peterson, Saskatoon, W L Robinson, Toronto, F W Routley, Toronto, T C Routley, Toronto, H Smith, Winnipeg, F N G Starr, Toronto, J Stevenson, Quebec, John Stewart, Halifax, M T Sullivan, Glace Bay, P H Thorlakson, Winnipeg, G C VanWart, Fredericton, S L Walker, Halifax, C A Warren, Toronto, R E Wodehouse, Ottawa, W A Wilson, Edmonton, F Woodhall, Hamilton, Geo S Young, Toronto

In a brief address, Dr S R Jenkins, President-Elect of the Association, welcomed the visiting members to the City of Charlottetown

REPORT OF THE COMMITTEE ON PERSONAL ARCHIVES

With the members of Council standing, the General Secretary read the report of the Committee on Personal Archives —

Mr Chairman and Members of Council —

Meetings of the Central Committee have been held in Montreal from time to time during the past year

In January, 1927, twenty-eight hundred *questionnaires* were mailed to members of the Association and of these, twelve hundred and thirty three have been returned completed. An alphabetical list of the completed papers has been prepared

A second request for the return of the *questionnaire* has been mailed to those members who have not yet completed the form, and the Provincial members of the Committee have been requested to speed up these returns when possible

It has been suggested that new members should be asked to fill in the *questionnaire* on joining the Association

During the year of 1927 the Committee regrets to report the death of the following members —

Dr A H Adams, Toronto, Ont
Dr J E Affleck, Nelson, B C
Dr Robt Archer, Port Perry, Ont
Dr A C Campbell, St Thomas, Ont
Dr B H Champion, Vancouver, B C
Dr W G Daw, Owen Sound, Ont
Dr D R Dunlop, Calgary, Alta
Dr J C Elliott, Chilliwack, B C
Dr D D Ellis, Listowel, Ont
Dr W D Ferris, Edmonton, Alta
Dr A E G Forbes, Lunenburg, N S
Dr Gerald W Grant, Halifax, N S
Dr T R Hanley, Toronto, Ont
Dr P J Kirby, Guelph
Dr C D McCulloch, Wellington, Ont
Dr J J McFadden, Stony Mountain, Man
Dr M E McKay, Edmonton, Alta
Dr Gordon E McLean, Fredericton, N B
Dr Campbell Myers, Toronto, Ont
Dr W R Riddell, Norwood, Man
Dr S J Rothwell, New Westminster, B C
Dr M Sharp, Tilbury, Ont

Dr J R Stanley, St Mary's, Ont
 Dr H C Steeves, New Westminster, B C
 Dr F W Stockton, Calgary, Alta
 Dr W E Struthers, Toronto, Ont
 Dr T A Swift, Abbotsford, B C
 Dr Oscar L Taylor, Mortlach, Sask
 Dr Gordon E Thompson, Hardisty, Alta
 Dr Jas Warburton, Charlottetown, P E I

All of which is respectfully submitted

C F WYLDE,

Chairman

Approved

REPORT OF THE EXECUTIVE COMMITTEE

The Report of the Executive Committee was discussed clause by clause, as follows —

Mr Chairman and Members of Council —

Three meetings of your Executive Committee have been held during the year. The Sub-Executive Committee met on two other occasions.

As most of our activities are discussed in the many reports presented herewith, it is unnecessary for your Executive Committee to report at great length. We respectfully direct your attention to the following —

1 — COMMITTEE ZONING

The principle of zoning the Committees of the Association, as adopted at our annual meeting in 1926, was adhered to during the past year. In our opinion, interest in the many branches of our work has thereby been sustained and increased. We would recommend that the plan be continued.

Approved

2 — SUN LIFE ASSURANCE COMPANY

It is indeed a matter of much gratification to your Executive Committee to be able to report a third grant of \$30,000 from the Sun Life Assurance Company of Canada to carry on our extra mural post-graduate work for another year. The report of the Post-Graduate Committee indicates that the work has been progressively successful. That we were able to initiate and continue for a period of three years this unique post-graduate plan, covering all Canada, is due to the marvellous generosity of our benefactors. No doubt Council will be glad again to express to the Sun Life Assurance Company our sincere thanks for their financial support.

Approved

3 — DEPARTMENT OF HOSPITAL SERVICE

Growing out of the recommendations embodied in the report of the Committee on Hospital Efficiency, as presented to our annual meeting last year, your Executive Committee approached the Sun Life Assurance Company to ascertain if they would be willing to extend their financial support to the Association to cover the cost of maintaining a Department of Hospital Service. We were asked to present a plan accompanied by a budget. This we were glad to do, indicating that the Department, in our opinion, could be successfully operated at a cost of \$15,000 a year. It is now common knowledge that the Company which so generously financed our post-graduate plan was good enough to make a further grant to our Association of \$15,000 a year, bringing their total annual grant up to \$45,000. Council will be glad to have this opportunity of further expressing to the Sun Life Assurance Company our great appreciation of their generosity.

Your Executive Committee gave much thought to the organization of this Department. We believe we were

fortunate in securing the services of Dr G Harvey Agnew as Associate Secretary of the Association to take charge of this new work. Although Dr Agnew has only been with us for five months, his report presented herewith indicates that the future holds much promise for a real service to the hospitals and the people of Canada through the Department of Hospital Service of the Canadian Medical Association.

Approved

4 — MEMBERSHIP

At the close of the year 1927, our membership stood as follows —

British Columbia	335
Alberta	248
Saskatchewan	283
Manitoba	349
Ontario	1,440
Quebec	542
New Brunswick	112
Nova Scotia	153
Prince Edward Island	43
Newfoundland	14
Miscellaneous	252

Total 3,771

At time of going to press, our membership stands at 3704, with 314 fees in arrears, the majority of which are hopeful. As membership remittances continue to reach our office daily, it is anticipated that the showing for 1928 will compare favourably with 1927. It must be pointed out to Council, however, that the place of meeting has a definite bearing upon membership, and, whereas we had an attendance at the annual meeting last year approximating 2,000, it is unlikely that our membership figures this year will measure up to 1927.

Approved

5 — COLLECTION OF FEES

It has been suggested by one of our members resident in Western Canada that the Association should inaugurate a plan of fee collection during the autumn months to cover the ensuing calendar year. It is said that the flow of money in Canada reaches its height in the autumn, which might make it easier for many members to meet their obligation to the Association at that time. On the other hand it will be admitted that the financial demands made upon all of us appear to be heavy about Christmas time and the New Year. The suggestion is passed to Council for consideration.

In connection with the above, the following recommendation was submitted to Council for consideration:

"That accounts for membership fees to cover the succeeding year be sent out in October, but that, before definite action is taken, a ruling be obtained from the Committee on Constitution and By-Laws."

Having been assured that there is nothing in the existing Constitution and By-Laws to prevent such a change being made, the following resolution was passed —

"That, henceforth, the membership fees for the ensuing year be collected in the month of October, instead of January as heretofore."

6 — NOTICE OF MOTION

At the present time, membership in our Association is contingent upon membership in one's Provincial Association. Periodically, this regulation has been said to work a hardship upon many of our members and would be members. The subject has been a matter for considerable

discussion in the Executive Committee from time to time. The following notice of motion, presented by Dr A MacG Young, of Saskatoon, is now passed to Council for attention —

"That membership in the Canadian Medical Association be not contingent upon membership in one's Provincial Association, and that our Constitution be so amended"

This proposal has been referred to all the Provincial Associations in Canada, with the following expressions of opinion notified to your General Secretary up to this time —

Provinces in favour of the amendment — Saskatchewan, Alberta, Manitoba and Ontario

Opposed — British Columbia, Quebec and Nova Scotia

Considerable discussion arose with reference to the advisability of allowing membership-at-large in the Canadian Medical Association, the following points being emphasized —

The decisions arrived at by the different provinces are no doubt the result of local conditions

As far as the Canadian Medical Association is concerned, there is no objection to a man being a member of the national Association without first being a member of his provincial Association in such provincial associations as are willing to allow it

There should be a certain amount of uniformity in connection with Canadian Medical Association membership across Canada

The Canadian Medical Association as a national organization should be open to every member of the profession in Canada

There should be continuity of membership in local, provincial and Canadian Medical Associations, in order to establish a strong national organization

Would suggest amending the constitution to permit of membership in the Canadian Medical Association, either with or without membership in a provincial association, according to the expressed desire of the provinces concerned

It was finally agreed that the matter should be referred to a sub-committee, to be named by the Chair, for study and report

The following committee was named —

Doctors A T Bazin (Chairman), H H Murphy, Kamloops, Geo S Young, Toronto, W A Wilson, Edmonton, S L Walker, Halifax, F J Farley, Trenton, J Stevenson, Quebec, G S Cameron, Peterborough, H McLean, Regina, Geo Hall, Montreal, J C Houston, Charlottetown

At a later session of Council, the above committee brought in the following report —

"We do hereby recommend to Council that Clause (a), Section 1, Chapter 1, of the By-Laws be amended to read as follows —

Any physician residing in Canada may be elected by the Council an ordinary member of the Canadian Medical Association, provided that,—

- (a) He is a member in good standing in his Provincial Branch Association, or
- (b) in a local society in Canada, other than or constituent of his own Provincial Association, or
- (c) upon application for membership in the Canadian Medical Association, his name being submitted to his Provincial Association and by them recommended for admission to membership in the Canadian Medical Association, and that a list of the members elected during the year under Clauses (b) and (c) shall be reported by the General Secretary to each annual meeting of Council"

The report of the sub-committee, as outlined above, was approved by Council

7—ANNUAL MEETING

Our President, Dr F N G Starr, accompanied by the Honorary Treasurer, Dr A T Bazin, and the General Secretary had the pleasure of meeting with the profession of Charlottetown in November, 1927, when plans for the annual meeting of this year were thoroughly discussed. Your Executive Committee is glad to report that our colleagues in Prince Edward Island have devoted themselves whole heartedly during the past six months to the task of preparing for the fifty-ninth annual meeting. To all of these gentlemen, and to the ladies associated with them, we desire to express our appreciation and thanks

Approved

8—ANNUAL MEETINGS 1929-1930

At our last annual meeting, Council accepted an invitation to meet in Montreal in 1929

As we are hosts to the British Medical Association at their annual meeting in Winnipeg in 1930, it would appear to your Executive Committee that our meeting for that year should consist of a business session only

Approved

The Secretary reported the receipt of a letter from the Hamilton Medical Society inviting the Association to meet in Hamilton in 1932, also an invitation from the Essex County Medical Society to meet in Windsor, Ont. These letters were ordered to be filed for later consideration

9—BRITISH MEDICAL ASSOCIATION, WINNIPEG MEETING, 1930

During the month of April last, Dr J D Adamson, of Winnipeg, and the General Secretary had the privilege of conferring in England with members of the Council and officers of the British Medical Association with regard to the annual meeting of the British Medical Association to be held in Winnipeg in 1930. The kindly reception accorded the Canadian delegates by their British Medical Association hosts left nothing to be desired. It was evident from the very beginning of the deliberations that the British Medical Association is looking forward with much pleasure to the Winnipeg meeting. It is hoped that the plans which were agreed upon by the Committee for presentation to the British Medical Association Council will be available for consideration at this annual meeting

The General Secretary gave a brief summa the important points discussed at the conference with the British Medical Association in Lo

in April, 1928, after which the arrangements, as outlined, were approved by Council, and the details in connection with transportation, etc., were left to the General Secretary to arrange, with the recommendation that, as far as possible, the British visitors be given an opportunity of seeing all Canada.

The British Medical Association having requested that two Vice-Presidents and a Secretary for each Section be nominated in Canada, one Vice-President and a Secretary by the Manitoba Medical Association, and the other Vice-President by the Canadian Medical Association, the following nominations are reported as having been made by the two organizations mentioned —

SECTION	VICE-PRESIDENTS	SECRETARY
<i>Medicine</i>	Dr Chas Hunter, Winnipeg, Dr Kenneth A MacKenzie, Halifax	Dr C R Gilmour, Winnipeg
<i>Surgery</i>	Dr B J Brandson, Winnipeg, Dr F H Mewburn, Edmonton	Dr A P MacKinnon, Winnipeg
<i>Obstetrics and Gynaecology</i>	Dr D S MacKay, Winnipeg, Dr W W Chipman, Montreal	Dr F G McGuinness, Winnipeg
<i>Bacteriology, Pathology, Physiology, Bio-Chemistry</i>	Dr Wm Boyd, Winnipeg, Dr Jas Miller, Kingston	Dr A T Cameron, Winnipeg
<i>Pædiatrics</i>	Dr S G Chown, Winnipeg, Dr Alan G Brown, Toronto	Dr O J Day, Winnipeg
<i>Mental Diseases and Neurology</i>	Dr A T Mathers, Winnipeg, Dr Jas W MacNeill, North Battleford	Dr E C Barnes, Selkirk
<i>Ophthalmology</i>	Dr T H Bell, Winnipeg Dr I G Campbell, Vancouver	Dr F D McKenty, Winnipeg
<i>Laryngology and Otology</i>	Dr S W Prowse, Winnipeg, Dr H S Birkett, Montreal	Dr G W Fletcher, Winnipeg
<i>Preventive Medicine</i>	Dr A J Douglas, Winnipeg, Dr John A Amyot, Ottawa	Dr T A Pincock, Winnipeg
<i>Tuberculosis</i>	Dr D A Stewart, Ninette, Dr C D Parfitt, Gravenhurst	Dr B H Olson, Winnipeg
<i>Radiology</i>	Dr J C McMillan, Winnipeg, Dr Leo Parizeau, Montreal	Dr F A Smith, Winnipeg
<i>Medical Sociology and History of Medicine</i>	Dr H M Speechley, Winnipeg, Dr J W Crane, London	Dr J C B Grant, Winnipeg
<i>Anæsthesia</i>	Dr W Webster, Winnipeg, Dr Wesley Bourne, Montreal	Dr D C Aikenhead, Winnipeg

Approved

10 — OFFICIAL FRATERNAL DELEGATES

(a) British Medical Association

Your Executive Committee learns with pleasure that Sir Lenthal Cheate has been appointed an official fraternal delegate from the British Medical Association to our annual meeting this year.

The following members having indicated that they propose to attend the annual meeting of the British Medical Association in Cardiff this year, your Executive Committee has been pleased to nominate them as our official fraternal delegates,—

Dr J D Adamson, Winnipeg,
Dr Duncan Graham, Toronto,
Dr H S Birkett, Montreal,
Dr W R Campbell, Toronto,
Dr Leonard Murray, Toronto

(b) American Medical Association

Your Executive Committee has been pleased to appoint Dr Harvey Smith, of Winnipeg, as our fraternal delegate to the annual meeting of the American Medical Association in Minneapolis.

Approved

11 — PERIODIC HEALTH EXAMINATIONS

Under the auspices of the Committee dealing with the matter of Periodic Health Examinations, distinct progress has been made during the year in regard to the production of a manual and forms to be utilized by the profession in carrying out periodic health examinations. Your Executive Committee would suggest that the whole question of making available physical examinations for those who are apparently well should be given careful consideration. Evidence is before us that some of the insurance companies of Canada would be interested in co operating with the Canadian Medical Association, to the extent of offering physical examinations to many of their policy holders. Detailed information, as available, will be presented to Council when this matter is under discussion.

Discussion on this matter was reserved until later, when the Report of the Committee on Periodic Health Examinations was presented to Council.

12 — MOTOR EMBLEMS

Four years ago, a design was approved by Council for a Canadian Medical Association Motor Emblem. 462 of these motor emblems have been sold to our members in various parts of Canada. During the past year, your Executive Committee was approached by one of the largest medical societies of Canada, suggesting that a change be made in the design of our Motor Emblem, because our present one, although a beautiful design, does not attract sufficient attention to be recognized by the police. An alternative design was suggested by this Society, and is presented to Council at this time for consideration.

It was agreed that a committee composed of Doctors Geo S Young, J S Hart, and H E MacDermott should study this matter and report at a later session of Council. The following report was later submitted by that committee —

"We would respectfully recommend that the motor emblem submitted for examination be adopted as the official motor car emblem of the Canadian Medical Association, with the following provisions —

That a committee of three, including Dr G Harvey Agnew, the Associate Secretary, be nominated by the Chairman of Council, with full power to arrange for the production of the emblem and its distribution upon the application of regularly qualified doctors, through the central office, it being understood

(a) that the emblem shall be registered by the Canadian Medical Association, or given such other legal protection as may be necessary,

(b) that the Committee shall be empowered to make such minor changes in the emblem as they deem fit,

(c) that the cost to members shall be not more than Two Dollars "

Some discussion ensued as to whether the badges should be sold outright, or whether the Association should retain the right to recall a badge if, in their opinion, its use was being abused. It was finally agreed that the report of the Special Committee, as outlined above, be adopted

13—PROVINCIAL CO OPERATION

During the past several years, the Provincial Medical Associations have co-operated both in the East and in the West by utilizing travelling teams of speakers particularly at their annual provincial meetings. Your Executive Committee is glad to report that this plan has again been adopted for this year

14—REFERRED BUSINESS

Communications which have come to hand since the publication of this report will be presented as New Business, or placed before Council for discussion in connection with the reports to which they refer

15—CONCLUSION

From point of view of membership, financial position and wide spread interest, the year 1927 was the most successful in the history of the Association. In the opinion of your Executive Committee, the Canadian Medical Association is constantly improving its position in Canada as a most potent influence in regard to all problems associated with the health of our people

This report would be incomplete without special reference being made to the splendid support which has been rendered the Association by the many Committees and individual members who have so whole heartedly assisted in carrying on our work during the past year. To all such, the Executive Committee, on behalf of Council, desires to express sincere thanks

All of which is respectfully submitted

T C ROUTLEY,

General Secretary

The report of the Executive Committee, as a whole, was approved

REPORT OF THE HONORARY TREASURER

Mr Chairman and Members of Council —

The year 1927, from a financial standpoint has been the most successful in the life of the Association and it is with pleasure that I present the audited statement of Messrs McDonald, Currie & Co. Our excess revenue for the year was \$14 103 82 (twice as much as the largest previously reported, in 1924). Receipts from advertising show an increase over 1926 of \$3,078 96, membership fees and subscriptions of \$5,901 19

The expenditure in 1927 exceeded that of 1926 by \$4 079 08

Assets, consisting of Cash, Accounts Receivable, Investments and Trust Funds amount to \$46,133 82

Liabilities, including Accounts Payable and Prepaid, balance of appropriation to Editorial Board, allocation for Department of Publicity and Health Education, Bonds outstanding and Trust Funds total \$21,091 92, leaving a Surplus Balance of Net Assets of \$25,041 90

The total budget administered during 1927, and including the Post Graduate Fund of \$30,000 00 amounts to \$97,879 38

DR A T BAZIN,

Honorary-Treasurer,

Canadian Medical Association,

University Street, Montreal

Dear Sir —

We beg to report that we have completed an audit of the books and accounts of the Association for the year ended 31st December, 1927, and attach Balance Sheet as at that date, together with statement of Revenue and Expenditure for the year

The Receipts and Disbursements of the General Secretary in Toronto, as shown on a statement certified to by Mr J H Dignam as auditor, have been incorporated in the books

A further grant has been made to the Association for Post Graduate work and a summary of the position of this fund at the close of its fiscal year on 30th September last, as set out in a further statement of Mr J H Dignam, appears on the Balance Sheet

Bad Debts amounting to \$148 56 have been written off

During the year twenty bonds of the Association were redeemed leaving a balance outstanding of \$3,500 00

We verified the cash on hand and in Bank and examined the securities held in your Safety Deposit Box on Investment Account and for trusts

After charging all known expenses the excess of Revenue for the year amounting to \$14,103 82, has been transferred to Surplus Account

We found your books in good order and were rendered every assistance in carrying out our work

Subject to the above remarks we certify that in our opinion the attached Balance Sheet is properly drawn up so as to exhibit a true and correct view of the state of affairs as at 31st December, 1927, according to the best of our information and the explanations given to us, and as shown by the books

Yours very truly,

(Signed) McDONALD, CURRIE & Co.,

Chartered Accountants

CANADIAN MEDICAL ASSOCIATION

BALANCE SHEET AS AT 31ST DECEMBER, 1927

		<i>Assets</i>	
Cash	On hand	\$	25 00
	In Bank		14,062 52
			<hr/> \$14,087 52
Accounts Receivable			
Advertising		\$1,095.59	
	Reprints	301 90	
		<hr/>	1,397 49
Deferred Account Receivable			
Advances re 1930 Annual Meeting			2,000 00

Investments

<i>At Cost</i>	\$5,100 Dominion of Canada 5/1943	
	\$3,000 C N R 4½/1954	
	\$2,000 Island of Montreal Met Comm 5/1949	
	\$2,000 Province of Ontario 5/1948	
	\$2,000 Dominion of Canada 4½/1946	
	\$1,000 Province of Ontario 4½/1939	\$19,758 35
	\$1,000 Province of Saskatchewan 4½/1945	
	\$1,000 Province of New Brunswick 4¾/1936	
	\$2,000 City of Toronto 4½/1942	
	\$1,000 City of Montreal 4½/1946	

<i>Donated</i>	\$1,000 Ritz-Carlton 1st Mtg 5%	1,000 00
		<u>\$20,758 35</u>
	Accrued Interest on above	241 51
		<u>\$20,999 86</u>
<i>Less—Special Reserve for Investments</i>		1,000 00
		<u>\$19,999 86</u>
Furniture and Fixtures		592 57

Trust Funds

<i>Research Fund—\$200 C M A</i>	
Bonds donated	\$200 00
Cash in bank	32 30
	<u>\$ 232 30</u>

<i>Lister Club Fund</i>	
\$4,000 City of Winnipeg 5/43 at cost	\$4,021 20
\$1,000 Dom of Canada 4½/1940 at cost	985 55
Cash in Bank	148 99
	<u>\$5,155 74</u>

<i>Osler Memorial Fund</i>	
Cash in Bank	1,500 00

<i>Post Graduate Fund—As at close of fiscal year, 30th September, 1927</i>	
Grant from Sun Life Assurance Company	\$30,000 00
<i>'Less—Speakers'</i>	
Expenses	\$24,770 70
Administration Expense	3,785 24
Equipment	275 72
	<u>\$28,831 66</u>
	<u>\$1,168 34</u>

Liabilities

Accounts Payable and Advertising Prepaid	\$3,234 24
Editorial Board	4,117 19
Bond Interest Accrued	44 11
Prepaid Subscriptions, 1928	140 00
Allocation for Department of Publicity and Health Education	2,000 00

Bonds 5% due 1931

<i>Authorized</i>	\$20,000 00
Issued and Paid-up	\$15,800 00
<i>Less—Redeemed</i>	<u>12,300 00</u>
	3,500 00

Trusts

<i>Research Fund</i>	
Capital	\$200 00
Interest Received	32 30
	<u>232 30</u>
<i>Lister Club Fund</i>	
Capital	\$5,030 41
Interest Received	125 33
	<u>5,155 74</u>
<i>Osler Memorial Fund</i>	1,500 00
<i>Post Graduate Fund</i>	<u>1,168 34</u>

Surplus Account

Balance 1st January, 1927	\$11,199 88
Excess of Revenue for Year	14,103 82
	<u>\$25,303 70</u>
<i>Less—Osler Committee Expenses</i>	261 80
	<u>25,041 90</u>
Balance 31st December, 1927	25,041 90

\$46,133 82

CANADIAN MEDICAL ASSOCIATION

STATEMENT OF REVENUE AND EXPENDITURE
FOR YEAR ENDED 31ST DECEMBER, 1927

By Total Subscriptions (Doctors' Libraries, etc)	\$31,833 03
Advertising	27,597 96
Excess of Revenue from Annual Meeting	7,125 77
Revenue from Investments and Bank Interest	1,067 85
Sundry Sales of <i>Journal</i>	234 77
Sale of Motor Emblems	20 00
TOTAL REVENUE	\$67,879 38

To Journal Expenses

Printing	\$24,873 67
Illustrations	1,297 06
Agents' Commission	3,544 45
Grant to Editorial Board	7,000 00
Newspaper Clippings	5 00
Bad Debts—Advertising	148 56
	<u>\$36,868 74</u>

To Administration and Financial Expenses

Bond Interest	\$ 250 36
General Expenses	2,071 91
Travelling Executive Committee	243 69
Expenses and Travelling General Secretary	1,326 68
Postage	252 00
Salaries	
General Secretary	9,000 00

Other	3,050 17	
Stationery	149 71	
Telephones and Telegrams	80 65	
Discount and Exchange	415 81	
Depreciation on Furniture and Fixtures, 10%	65 84	
	<u>\$16,906 82</u>	
TOTAL EXPENSES		<u>\$53,775 56</u>
Excess of Revenue for year carried to Surplus Account as per Balance Sheet		\$14,103 82

BOND ISSUE

After redeeming twenty Bonds October 1st, 1927, thirty-five remained outstanding. At the meeting of the Executive Committee on March 20th, 1928, your Committee decided that, in view of the substantial surplus balance recorded for the year and the very remote possibility that the outstanding \$3,500 00 would be further required, this debt be paid off immediately. As the first six months terminated with April 1st the thirty-five Bonds, with accrued interest, were redeemed on that date. This successfully clears off this indebtedness. The whole issue of \$15,800 00 has been paid off within seven and a half years—two and one half years before maturity.

A letter went forward during the first week in April to all members who had been subscribers informing them of the action of the Committee regarding the final thirty-five bonds and the complete redemption of the issue. The letter also contained an expression of thanks from the Executive Committee for the active support members rendered by subscribing to the issue during the crisis in 1921 when it was evident that the future of the Association and *Journal* hinged on the successful outcome of this undertaking.

ITEMIZED STATEMENT OF BOND ISSUE

To Bonds Redeemed	By Bonds Issued	
Oct 1st, 1923	1921	\$ 4,000 00
" 1924	1922	11,800 00
" 1925		
" 1926		
" 1927		
Apr 1st, 1928		
		<u>\$15,800 00</u>
		<u>\$15,800 00</u>

TRAVELLING EXPENSES OF EXECUTIVE COMMITTEE

This expense account which covers the year from July to July and constitutes 50 per cent of the travelling expenses of members to the meetings of the Committee is the lowest on record and amounted to \$243 69.

SPECIAL FUNDS

Post Graduate Fund

During the past two years cheques in connection with this fund were sent by the Sun Life Assurance Company direct to the General Secretary. It was considered desirable, however, that this and all other monies received and expended in the interests of the Association should be recorded on the Treasurers books. Arrangements have therefore been made whereby monies from all sources are now received by the Treasurer and deposited in the General Fund. Cheques for use of special committees are then issued as funds are required.

A full report on the activities of the Post-Graduate Committee will be given by its Chairman, but a summary of expenses from October 1st, 1926 to September 30th, 1927, according to the audited statement of Mr J H Dignam, is appended.

SUMMARY AS ON SEPTEMBER 30TH, 1927

Expenditures		
Speakers' Expenses		
Central Committee	\$22,731 75	
Quebec Committee	2,033 95	
	<u>\$24,770 70</u>	
Administrative Expenses		
Central Committee	\$1,779 56	
Quebec Committee	2,005 68	
	<u>\$3,785 24</u>	
Equipment		
Central Committee	\$ 56 00	
Quebec Committee	219 72	
	<u>\$275 72</u>	
Balance		<u>1,168 34</u>
		<u>\$30,000 00</u>

Receipts

Grant from Sun Life Assurance Co	\$30,000 00
Department of Hospital Service Fund	
To First Instalment Feb 1st, 1928	\$3,750 00
Second Instalment Apr 4th, 1928	3,750 00
	<u>\$7,500 00</u>
Balance to be received during 1928	<u>7,500 00</u>
	<u>\$15,000 00</u>
By Grant from Sun Life Assurance Co	<u>\$15,000 00</u>

Lister Club Trust Fund

At the annual meeting, last June, we reported the total subscriptions to have reached the sum of \$4,971 00. During that month the New Brunswick Medical Society forwarded subscriptions amounting to \$105 00 which brought the total capital to \$5,076 00, the fund being thereby oversubscribed by \$76 00.

The expense account of Sir Charles Sherrington, the Listerian lecturer in 1927, was \$491 77. The interest, which is allowed to accumulate to defray the expenses of the triennial oration was \$446 18 and was therefore insufficient by \$45 59. The Council decided that this debit balance should be paid out of the surplus capital and that all monies on hand in excess of the \$5,000 00 should be carried forward and used for the expenses of the next oration.

The publication of the second Listerian Oration in October, 1927, including 200 reprints with covers to Sir Charles Sherrington and Dr Archibald Young cost \$729 76 which was paid out of the General Fund. Statement of receipts and disbursements to April 30th, 1928, are as follows—

By Total Capital Received	\$5,076 00	
Received from Investments and Bank Interest Dec 1st, 1925 to April 30th, 1928	599 65	
	<u>\$5,675 65</u>	
To Expenses of Listerian Oration, June 30th, 1927	\$ 491 77	
Bank Charges	25	
Investments		
\$4,000 City of Winnipeg 5/1943 at \$100 50, Yield 4 96%	\$4,021 20	
\$ 900 Dom of Canada 4 1/2/1940 at \$98 45, Yield 4 66%	\$86 05	
\$ 100 Dom of Canada 4 1/2/1940 at \$99 50, Yield 4 56%	99 50	
	<u>5,006 75</u>	
Accrued Interest on Investments	3.59	
	<u>\$5,502 36</u>	
Balance in Bank April 30, 1928		<u>\$ 173.29</u>

Osler Memorial Fund

The money received through the Chairman of the Osler Committee has been placed in a separate bank account and totals to date \$3,325 00 Out of this \$2,519 00 has been invested

By Total Capital to date as forwarded by Chairman of Osler Committee

Dec 10th, 1927	\$1,000 00
Dec 20th, 1927	500 00
Jan 7th, 1928	500 00
Jan 23rd, 1928	390 00
Feb 7th, 1928	120 00
Feb 23rd, 1928	300 00
Feb 28th, 1928	225 00
Apr 27th, 1928	290 00

\$3,325 00

in attendance amounted to \$111 20 A further sum of \$200 00 was authorized by the Executive as applicable to legal fees

FINANCE COMMITTEE

On the recommendation of your Honorary-Treasurer a Finance Committee consisting of Drs C F Martin, W G Reilly and the Honorary-Treasurer has been appointed for the purpose of consulting on the investments of the General and Special Funds of the Association and upon matters dealing generally with the financial administration The steady increase in the funds made this step desirable

COMPARATIVE STATEMENT

REVENUE

EXPENDITURE

	Sub- scription	Advertise- ments	Annual Meeting	Interest from Investm'ts and Bank Dep	Total Revenue	Journal	Salaries	Total Expendi- ture	Excess Revenue
1921	\$13,554 49	\$11,266 31		\$ 50 00	\$27,112 19	\$20,089 40	\$ 4,636 50	\$29,819 73	\$ 2,707 54*
1922	16,684 82	16,860 02		50 00	33,921 43	18,228 54	4,923 00	27,185 19	6,736 24
1923	20,657 02	16,247 48		50 00	37,195 94	20,500 47	7,003 80	31,152 80	6,043 14
1924	24,674 32	19,109 07		443 95	44,608 23	25,410 33	7,083 50	37,544 98	7,063 25
1925	24,944 58	23,672 46		839 27	49,648 48	28,590 90	9,349 04	44,148 55	5,499 93
1926	25,987 20	24,519 00	\$3,486 05	917 23	52,117 31	34,001 63	9,534 84	49,696 48	2,420 83
1927	31,833 03	27,597 96	7,258 77	1,067 85	67,879 38	36,868 74	12,050 17	53,775 56	14,103 82

*Deficit

All of which is respectfully submitted A T BAZIN, *Honorary-Treasurer*

Interest from In- vestments	\$25 00
Interest from Bank to April 30, 1928	7 46

32 48

\$3,357 46

To Investments

\$1,500 Pac Gt East Rail (Gtd by Prov of British Columbia 4 1/2/1942 at \$99 50, Yield 4 55%	\$1,492 95
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\$1,000 Montreal Tramways (Int. Gtd by City of Montreal) 5/1955 at \$100 25, Yield 4 98%	1,026 05
--	----------

Accrued Interest

\$2,519 00

33 29

\$2,552 29

Balance in Bank
Apr 30, 1928

\$ 805 17

In presenting the above report, Dr Bazin recommended that members of the Executive Committee attending meetings other than the annual meeting be reimbursed the full amount of their travelling expenses, provided the total sum thus disbursed for any one year does not exceed \$1,000, and, in the event of this figure being exceeded, that payment be made on a pro-rata basis This was approved

The report of the Honorary Treasurer was approved

REPORT OF THE EDITOR

Mr Chairman and Members of Council —

COLLEGE OF PHYSICIANS AND SURGEONS OF CANADA

The Council, in 1927, authorized monies to be set aside as a loan for organization expenses of the Committee on the formation of a College of Physicians and Surgeons of Canada A meeting was held at Ottawa on February 23rd, 1928, and the expenses of the members

The Editor in presenting his annual report desires to express his indebtedness, and that of the editorial staff, to the many contributors from every province who have enabled the *Journal* to attain, during the past twelve months, an increasingly high standard and present its readers with important papers of practical and scientific interest Canada has of recent years taken an important position in the medical world owing to the excellent scientific work carried out in its universities and hospital laboratories, and to the high standard of the papers presented at its various meetings Especially valuable have been many of the papers which have appeared in our *Journal* during the past year Among the more notable

we may mention those which have dealt with the following subjects: diabetes mellitus and its treatment by insulin, the active principle of the parathyroid gland and its value in tetany, pernicious anemia, its etiology and treatment by liver extract, heart disease in its various forms including coronary thrombosis, gastric and duodenal ulceration, intestinal obstruction, the innervation and development of malignant tumours, and the influence of sunshine and skyshine in the treatment of rickets. Two particularly instructive series of papers have appeared, one on hereditary abnormalities of the eye, and the other on diseases of the blood and blood-forming organs. The subject of anaesthesia and anaesthetics has been fully discussed. Indeed the editorial staff can point to the extensive index of contents for 1927 as a credit to the Canadian profession and to the work accomplished by its members.

In addition to these purely professional papers the *Journal* has also presented to its readers a very excellent series of papers on the History of Pathology. It is also a source of pleasure that we have this year been able to obtain and publish the history of several of our Canadian medical schools. The story of the remaining ones has been promised to the *Journal* in the near future. Here we may state that the editorial board will be very glad to receive and publish the story of the life of any one of the many local leaders in our profession who have made early history in our various provinces, and also any interesting historical item which in any way has to do with members of our profession.

In addition to the regular letters from London and Edinburgh, which we may state have received much favourable comment from many of our readers, letters have been received in this department from France, India, China and Japan. The editorial board would again emphasize its desire to obtain letters for publication in our Correspondence Department from readers in every province discussing local problems of interest, and problems which may affect the well-being of the profession at large.

As the past year was the centenary of Lister's birth this event, on the suggestion of Dr John Stewart, of Halifax, was celebrated not only in every university, but also in every large hospital in the Dominion. The second Listerian oration, delivered by Sir Charles Sherrington at the annual meeting in Toronto, was published as a special issue which contained not only Sir Charles Sherrington's address but also a very interesting address delivered at the centenary celebration in London by Mr Archibald Young, of Glasgow, describing Lister's early work in the wards of the Glasgow Royal Infirmary and the opposition it met with from the hospital authorities. We were also able to publish in this special issue a report by Dr George Rae Gibson, of the Lister Centenary Celebration in Edinburgh, and also a short account of Lister's first visit to America. A reproduction of the coloured portrait of Lord Lister was included, a very pleasing addition to the number made possible through the courtesy of the British Medical Association whose managing editor very kindly loaned the necessary blocks.

The Editor desires to take the present opportunity to express his indebtedness and thanks to the editorial boards of the various provinces and especially to their several chairmen who have not only contributed local news and items of interest, but have assisted in a very marked degree in maintaining a spirit of co-operation and goodwill with the *Journal* in their respective provinces.

It is with much regret that the Editor feels obliged to retire this year from much of the arduous work associated with the editorship. Having passed his fourscore years his friends demand that he take life more leisurely. The *Journal*, however, has been most fortunate in securing the services of Dr Albert G. Nicholls, formerly Professor of Pathology in Dalhousie University, to take charge of this work. Dr Nicholls is particularly well fitted for the editorial task, both by education and experience. His many contributions during the past year have already made him familiar as a writer to all the readers of the *Journal*. We feel therefore certain that his services will prove in every way satisfactory and a great asset to the *Journal*.

The thanks of the Editor are also due to his assistant, Dr MacDermot, who, during the past year, has rendered particularly valuable services. To correspondents both in Canada and abroad, and to all co-workers and contributors the Editor desires to express his indebtedness and thanks.

The whole of which is respectfully submitted

A. D. BLACKADER

Editor

Approved

Reference having been made in the above report to the celebration of the centenary of Lister's birth, it was agreed that the Medical Schools and Provincial Associations of Canada should be asked to co-operate in celebrating "Lister Day" in a fitting manner.

It was resolved that the following cablegram should be sent to Dr Blackader in appreciation of the service he has rendered the Association —

"The Canadian Medical Association in annual convention at Charlottetown expresses by resolution of Council its deep sense of obligation and appreciation to you as the director of the destinies of the *Journal*, and, on this your birthday, wishes you many happy returns."

REPORT OF THE MANAGING EDITOR

Mr Chairman and Members of Council —

Few changes have been made in the technical construction of the *Journal*, the only one of note being a change in the size of type of the headings of original articles, and the running headings at the top of each page. For both a smaller type is used, and the running heading is separated from the subject matter on the page by a thin double line. This change was effected with the April issue, and is felt to be a distinct improvement.

WRAPPERS

The matter of using wrappers instead of envelopes for the mailing of the *Journal* has been carefully gone into as their adoption would mean a saving of some \$200.00 per year. On account of the weight of the *Journal*, however, it is not considered advisable and therefore not recommended. Every single *Journal* weighs one pound and over, and wrappers would probably not afford the same protection from damage in the mails as do the stout envelopes now in use.

EXCHANGE JOURNALS

The *Journals* sent out on an exchange basis number 70, and the *Journals* we receive in return are the leading English, American and Foreign Medical *Journals* which are used by the Editorial Boards in the work of abstracting articles of special value, and for purposes of reference.

COMPLIMENTARY JOURNALS

The free *Journals* mailed each month number 164 and the list comprises officers of the British Medical Association who receive the *Journal* by reason of our affiliation, the presidents of our Canadian universities, the presidents of the Medical Undergraduate Societies of every Canadian university, the Canadian Medical Libraries, Canadian Foreign Missionaries in the Field, and publishers who supply books for review. In this connection it is gratifying to note that for the year there are 403 medical student subscribers, who receive the *Journal* for \$2.50 per annum.

INDEX

It is proposed that commencing with the current year the twelve issues be divided into two volumes in place of

one and an index published with each volume. The twelve issues when bound make too large a book for convenient handling and too heavy for durable binding. By dividing the *Journal* into two volumes and publishing the index semi-annually these difficulties will be overcome. The index will therefore appear in every June and December number.

ADVERTISING

Criticism has been received on one or two occasions in reference to our policy of distributing advertising among the last pages of reading matter in the back section of the *Journal*. On account of the remunerative value, however, of such advertising space any drastic change is not recommended for the time being, for these pages are sold at a higher figure, which aggregates about \$1,000 00 per year over other pages. It is proposed, however, to reduce their number, as and when feasible, to four or five instead of the seven or eight.

There are, at present, 121 firms advertising in the *Journal*, which figure does not include classified or single insertions. The receipts from advertising in 1927 exceeded those of 1926 by \$3,078 96.

EDITORIAL BOARD ACCOUNT

The Editorial Board has expended \$5,256 50 in 1927 out of its allowance of \$7,000. The Department has now a credit balance of \$4,117 19. This is made up as follows:

Balance carried forward Dec 31st, 1926	\$2,271 69
Balance carried forward Dec 31st, 1927	1,743 50
Interest to Dec 31st, 1927	102 00
	<hr/> \$4,117 19

All of which is respectfully submitted

ALFRED T. BAZIN,
Managing Editor

Approved

Considerable discussion ensued as to the possibility of reducing the cost of the *Journal* without sacrificing the excellent character of the publication. Dr. Bazin pointed out that, in order that illustrations and cuts may be of any value, it is necessary that a good quality of paper be used in the *Journal*. The question of semi-monthly publication was also considered, but the general opinion was that it is preferable to publish one excellent journal each month rather than an inferior one semi-monthly or weekly.

The question was asked, "Why not allow a special reduced rate to members who are so grouped together in practice as to require only one *Journal* for the whole number?" It was pointed out that membership in the Association is obtainable only upon payment of the \$10 00 fee, the *Journal* being a perquisite of membership. Attention was drawn to the fact that many members who do not require the *Journal* themselves are having their copies sent to medical missionaries.

The following recommendations were submitted to the Executive Committee by the Managing Editor, following a meeting of the Editorial Board held in Charlottetown on June 20th —

- 1 That Dr. A. D. Blackader, be appointed Editor; Dr. A. G. Nicholls, Associate Editor, and Dr. H. E. MacDermott, Assistant Editor.
- 2 That the Editorial Board appropriation for the year 1928 be raised to \$10,000.
- 3 That the *Journal* be regularly "Copyrighted."
- 4 That the organization of the Editorial Board be made to conform in some degree to the organization of other standing committees, viz —

That, as heretofore, the Provincial Associations be asked to appoint their representatives on the Editorial Board, that, in addition, the Editor as Chairman, be empowered to select and nominate to the Executive Committee for appointment —

- (a) Members of the Central Committee,
- (b) Members throughout Canada who are or may be valuable to the *Journal* and who may correspond directly with the Editor.

- 5 That it is desirable to publish a "complete index" of the *Journal*.

It is recommended that this index shall cover the first twenty-one volumes, i.e., January, 1911, to June, 1928, (21 volumes), the work to be undertaken if and when the Executive considers that funds (estimated cost, \$3,000) are available for the purpose.

Approved

REPORT OF THE COMMITTEE ON ETHICS

Mr. Chairman and Members of Council —

Your Committee on Ethics, of which the nucleus is located in Kingston, has met three times.

No matter was considered of such urgent importance as to require reference to all the scattered members.

The problems laid before the members were —

(1) A complaint of disgraceful conduct on the part of a practitioner. The Committee decided that there was not sufficient evidence to warrant action.

(2) The question of the right of certain drug houses to use papers and extracts published in the *Canadian Medical Association Journal*.

The Committee decided that the rules of the Editorial Board provide for this difficulty.

(3) The question of the use of the name of a member of the Association upon the printed label of a proprietary article.

The Committee decided that there was no special danger connected with the particular case submitted to them, but that the practice was open to abuse, even if permitted in special cases.

All of which is respectfully submitted.

L. J. AUSTIN,
Chairman

Approved

REPORT OF THE COMMITTEE ON PUBLICATION AND PUBLIC HEALTH EDUCATION

Mr. Chairman and Members of Council —

The personnel of this Committee is as follows —

- Dr. J. G. FitzGerald, Toronto (*Chairman*),
- Dr. Gordon Bates, Toronto,
- Dr. J. L. Biggar, Toronto,
- Dr. H. C. Boughton, Saskatoon,
- Dr. G. D. Porter, Toronto,
- Dr. George A. Ramsay, London,
- Dr. D. E. Robertson, Toronto,
- Dr. A. MacG. Young, Saskatoon.

Several meetings of the Committee have been held during the year, when matters of policy were considered. Acting upon the resolution passed by Council at the last annual meeting, and with the approval of the Executive Committee,

cutive Committee, the Health Service Department of the Association was inaugurated on January first of this year. A series of weekly health articles were prepared by Dr. A. Grant Fleming, who, without remuneration, has consented to act as Associate Director in charge of the Health Service Department for the current year. These articles were offered to the English and French language newspapers of Canada. As of May first, 184 newspapers, published in Canada having an aggregate circulation of 1,174,443 copies, have accepted the proffered service and are publishing the articles weekly. Each article is submitted to the newspapers in the following form —

HEALTH SERVICE of the CANADIAN MEDICAL ASSOCIATION

Questions concerning health, addressed to the Canadian Medical Association, 184 College Street, Toronto, will be answered by letter. Questions as to diagnosis and treatment will *not* be answered.

The newspapers in which this popular health educational material appears, are published in every Province of the Dominion. Newspapers in the larger cities from coast to coast, as well as those in the small towns, have gladly accepted the service thus rendered by the Canadian Medical Association.

A large number of letters of enquiry have been received and have been answered by the Associate Director of the Health Service, on behalf of the Association. The original letters and the replies thereto have also been read and considered by the General Secretary and by the Chairman of the Committee. This has entailed a very considerable volume of work. In this connection, the Committee, and through it the Association, is deeply indebted to Miss McQuarrie of the Montreal Tuberculosis and General Health League, for much assistance in the preparation and translation of replies to those correspondents whose enquiries, written in French, are replied to in that language.

Health Service articles of the Association have regularly appeared in a number of newspapers in the Province of Quebec. Included among these, is the newspaper with the largest circulation of any paper printed in the French language.

When the Health Service Department was organized, it was anticipated that a grant would be received to provide for its support for the year. Subsequently, however, it was learned that this contribution would not be forthcoming and a very modest appropriation of two thousand dollars was made by the Executive Committee to permit the Department to inaugurate its work. As has already been indicated a very heavy task was generously assumed by Dr. A. Grant Fleming, who declined to receive an honorarium for his services when the Department was organized. The Committee desires on behalf of the Association to express its appreciation of the splendid work done by Dr. Fleming.

Since the work of this Committee and that of the Committee on Public Health and Periodic Health Examination is cognate, it would seem advantageous to consider the question of constituting a new Committee which would embrace the functions of all three. Such a combined Committee would probably be in a better position to correlate much of the work which at present is somewhat artificially divided and dealt with by three separate groups instead of being allocated to a composite and representative committee competent to undertake work bearing upon the problems of public health, publicity and popular health education, as well as periodic medical examinations.

All of which is respectfully submitted

J. G. FITZGERALD,
Chairman

Approved

In presenting the above report, Dr. FitzGerald called attention to the valuable assistance rendered this Department by Dr. A. Grant

Fleming, McGill University, and the Montreal Anti-Tuberculosis and General Health League

REPORT OF THE COMMITTEE ON PUBLIC HEALTH

Mr. Chairman and Members of Council —

Your Committee on Public Health for 1927-28 is made up of the following —

Quebec - - - - -	Dr. J. Roddick Byers, Westmount, Dr. H. B. Cushing, Montreal, Dr. H. S. Shaw, Outremont, Dr. W. T. B. Mitchell, Montreal, Dr. A. H. Desloges, Montreal, Dr. J. E. Dubé, Montreal, Dr. A. Grant Fleming, Montreal, (Chairman),
Ontario - - - - -	Dr. J. G. FitzGerald, Toronto, Dr. Geo. D. Porter, Toronto,
British Columbia - - -	Dr. H. W. Hill, Vancouver, Dr. F. T. Underhill, Vancouver,
Saskatchewan - - - -	Dr. M. M. Seymour, Regina, Dr. R. M. Bow, Regina, Dr. Arthur Wilson, Saskatoon,
New Brunswick - - -	Hon. Dr. Wm. F. Roberts, St. John, Dr. William Warwick, St. John,
Alberta - - - - -	Dr. L. S. Mackid, Calgary, Dr. Geraldine Oakley, Calgary,
Nova Scotia - - - -	Dr. W. H. Hattie, Halifax, Dr. A. C. Jost, Halifax,
Manitoba - - - - -	Dr. A. J. Douglas, Winnipeg, Dr. D. A. Stewart, Netette,
Prince Edward Island	Dr. I. J. Leo, Charlottetown

Your Committee has deemed it advisable to place before the Association, for consideration, the question of housing. In the prevention of disease and the promotion of health, a good environment plays a most important part. Whilst attention has swung away from environment because of the newer understanding of the importance of the individual, environment is of essential importance in making possible the carrying out of personal hygiene.

Throughout Canada, there are groups of citizens interested in the subject of town planning and housing. It seems desirable that the Association be on record, for the information of such groups, as to the principles of which they approve.

Your Committee, in submitting these principles for endorsement, has indicated the main points which should be covered, because of their relationship to health, in legislation dealing with the subject, and has not attempted specific definitions. It is appreciated that education must precede legislation, and that the only legislation which is of value is that which represents public opinion.

The following principles are submitted —

1. That every town or city should have town planning and housing legislation, with provision for its enforcement. That whatever provincial legislation is necessary to make such town planning and housing effective should be passed by the various Provincial Legislatures, and such town planning should provide for open spaces, playgrounds and residential areas.

2. That Provincial Health Departments pass regulations governing the construction of new dwellings and the remodelling of old dwellings throughout each province to ensure healthy homes in both urban and rural areas. Under a Provincial Town Planning and Zoning Act, the Provincial Health Department should enact housing regulations suitable to the various zones created. All plans for new dwellings and for the remodelling of old dwellings should be passed upon by the local sanitary authority before a permit for building is issued.

3. That every dwelling be built on a dry site, with the long axis of the dwelling north and south, thus allowing for the entrance of sunlight to every room, and that it be weather-proof and damp-proof.

4. That every dwelling have yard space and be not over-crowded by other buildings.

5 That every dwelling, where there is a public water-supply within reasonable distance, have such supply introduced into the dwelling

6 That every dwelling, where there is a public water-supply and sewers within reasonable distance, be provided with proper sanitary conveniences—water-closet, bath, wash-basin and kitchen-sink

7 That every dwelling have a separate kitchen with cooking facilities, and a fly-proof, ventilated food and milk-safe

8 That every dwelling have provision for its adequate and safe heating and artificial lighting, and that the use of gas stoves for cooking and heating be properly safeguarded

9 That no dwelling house have outside porches, platforms, balconies or stairways so located or constructed as to interfere with or diminish the light or ventilation required

10 That every room in every dwelling be of adequate size with provision for lighting and ventilation

11 That every room in every dwelling have at least one window of proper size, opening directly on a street, yard or court of adequate dimensions

12 That alcove rooms be considered as separate rooms, as to size, requirements of windows and provision for ventilation

13 That the number of persons per room per dwelling be limited in order to prevent over crowding

14 That no person be allowed to sleep or live in cellar rooms

15 That, preferably, no person be allowed to sleep or live in basement rooms. If such be allowed, such rooms should be adequately ventilated and lighted and, in addition to all this, the Sanitary Authority should be given power to pass finally on conditions

16 That dwellings built for and intended as one-family dwellings be not otherwise used as multiple dwellings, unless alterations be made that render them suitable for use as multiple dwellings

Your Committee would recommend, subject to their endorsement by the Association, that a copy of these principles be forwarded to all provinces

In regard to the subject referred by Council to the Committee for consideration—that is, the drawing up of a scheme of Public Health Insurance—your Committee advises that the desirability of taking further steps in this matter be determined by Council, after hearing the report of the sub-committee which was to be appointed to study the whole question of health insurance

Your Committee would urge that this study be continued, and that, through the sub-committee's reports to Council and any special reports, the profession be kept informed as to what is being done elsewhere in this field

All of which is respectfully submitted

A GRANT FLEMING,
Chairman

Considerable discussion ensued with reference to Clause 3 of this report and it was finally agreed that it be changed to read as follows —

"That every dwelling be built on a dry site, with (where possible) the long axis of the dwelling north and south, thus allowing for the entrance of sunlight to every room, and that it be weather-proof and damp-proof"

It was also agreed that the paragraph, "Your Committee would recommend all provinces" should be changed to read as follows —

"Your Committee would recommend, subject to their endorsement by the Association, that a copy of these principles be forwarded to the Provincial Governments and to such other agencies as may be designated by the incoming Executive Committee"

In the discussion on this report it was recommended that a copy of the report be sent to each of the Provincial Boards of Health, asking them to take action to see that houses reported as unsanitary be either destroyed or put in a sanitary condition. It was also recommended that the report *in toto* be used for publicity purposes by the Committee on Publicity and Public Health Education

The report, as amended, was approved

REPORT OF THE COMMITTEE ON PERIODIC HEALTH EXAMINATION

Mr Chairman and Members of Council —

Since the last annual meeting of the Canadian Medical Association, at which a progress report was given, your Committee has completed a "Manual of Guidance" and "Record Form" for physicians desiring to undertake Periodic Health Examinations

This Manual and this Record Form have been submitted to a number of physicians and surgeons interested in their publication, and in their present form, the Manual and Record Form represent a more or less united opinion of this group

The Manual will be published as a booklet, in which the pages will be 5" x 8", and the Record Form (half size) will be included therein. Additional forms will be printed in full size—one to be enclosed in each booklet for the use of practitioners

Arrangements have been concluded with the Federal Department of Health, by which they will not only print the volume but likewise will distribute one copy to each physician in Canada (irrespective of whether he is a member of the Canadian Medical Association or not)

The Canadian Medical Association can, moreover, have a plate made and print further copies of the Record Form for use by the profession. These forms will, of course, be issued to the profession at a reasonable rate, and it is expected that all physicians who use the form will be willing to pay for a supply

The technique of popularizing Periodic Health Examinations has been discussed by the Committee, as well as with other members of the profession

It is hoped that co-operation with the Insurance Companies may be effected to facilitate the dissemination of the idea. For the present, we believe that the distribution of the Manual and Form is in itself a satisfactory beginning, and it would be well to await the response from the profession before attempting more detailed plans

In conclusion, we suggest that the Canadian Medical Association express its indebtedness to the Federal Department of Health for its co-operation and valued assistance

All of which is respectfully submitted

C F MARTIN,
Chairman

Supplementing the above report, the General Secretary outlined the following plan for the carrying out of periodic health examinations by the Canadian Medical Association, in co-operation with the insurance companies of Canada —

The Canadian Medical Association offers to the insurance companies of Canada a plan whereby their policy holders will be given a complete physical examination, the policy holder, in each instance, selecting his own doctor. For this examination, the insurance company will pay the Canadian Medical Association a fixed fee

We in turn will pay the examining physician, and retain a certain amount for overhead

After receiving the list of policy holders contracted for by the insurance company, a letter is written to the policy holder asking him to nominate the doctor whom he would like to have examine him. Upon receipt of this information, a tripartite form is sent to the doctor, with instructions that he get in touch with the policy holder named and have the examination completed. It will be noted that this form is in three parts. Part one is the record of the examination, details of which are only known to the policy holder and the doctor. It is most important to stress the point that no information regarding the examination is imparted to any other person or institution. The same confidential relationship exists between the doctor and the policy holder as now obtains between the doctor and his patient. The report may either be retained by the physician, or given to the policy holder, as is mutually agreed upon by these two persons.

Section 2 is the physicians report form to the Canadian Medical Association, merely stating that the examination has been carried out. Upon receipt of this voucher, the doctor will be paid. This will also be the voucher upon which we will collect from the insurance company.

Section 3 is the report from the policy holder, which indicates to us whether or not he was satisfied with the examination. This report offers the one avenue of information to the Canadian Medical Association as to how the work is being done.

Obviously, the whole scheme involves careful preparation and propaganda, whereby both the physician doing the work and the policy holders to be examined will be made thoroughly familiar with what is involved.

OUTSTANDING FEATURES

- 1 The policy holder names his own doctor
- 2 The examination form will be sent to the doctor so named
- 3 The responsibility rests with the doctor to approach the policy holder
- 4 The policy holder's report makes it possible for us to follow the work. The doctor's report is not lengthy, and is merely a voucher upon which we pay him
- 5 The plan makes it possible for organized medicine, through the practising physicians of Canada, to offer to the insurance companies of Canada a service which will fill a long felt want
- 6 If Council authorizes the Association to initiate this work, we have every reason to believe that at least some of the insurance companies are prepared to enter into a contract with us

In the discussion which ensued in reference to the above, it was evident that the members of Council were strongly in favour of the plan, and it was agreed that steps should be taken to put it into operation with the least possible delay. It was the general feeling of the members of Council that the fee paid the doctor for such examination should in no case be less than \$4.00. It was also agreed that, as far as possible, in connection with the post-graduate work conducted by the Association, the members of the profession throughout Canada should be thoroughly informed with reference to the plan to be adopted for periodic physical examinations and it was recommended that a moving picture film be prepared to illustrate the conduction of a physical examination.

REPORT OF THE COMMITTEE ON MEDICAL EDUCATION

Mr Chairman and Members of Council —

Your Committee on Medical Education begs to report as follows —

The report of 1927 was read but in the absence of the Chairman was deferred for action until the meeting this year.

We have reviewed the ground covered by that report and finding no cause for change of views, again submit it for your consideration as follows —

In this report our aim is to deal in the main with foundation or basic principles. To go into the details of medical education, no matter how important they are in themselves, leads in most instances into the realm of the medical faculty and the teacher. These know the various intrinsic problems better than we do, and they are, we believe, earnestly and diligently applying their large experience and good judgment to solve them.

The individual school should have, we believe, freedom of action in respect of details and methods. There must be elasticity to give adequate scope for individuality, and adaptability to the special conditions, environment and opportunity, of any or all of the Canadian medical schools and teachers. This implies—as we intend it—that any attempt to standardize should not go beyond that based on general principles. It is our opinion that the aim of the medical school should be to obtain a product, on graduation, that may be designated as a well trained, or good general practitioner. This will at least convey an idea of the standard we have in mind, in the absence of a more definite term.

To obtain this standard the curriculum must be well balanced, and so must the teaching. While daily the teacher is exerting positive efforts to that end, equally positive efforts should be made to avoid the natural tendency of students (and sometimes the teacher) to dip too far towards specialization here and there, or to utilize the findings of the laboratory as a substitute for the more arduous, but vital process of thinking, and acquiring the habit of thinking properly. We are in accord with those who urge the necessity of schools and teachers having, as the central idea, that of teaching and training the student to think properly. Thus the laboratory demonstration, the clinic, the lecture, or whatever exercise it may be, is utilized primarily to meet that requirement, and the information imparted or obtained is but a means to that end. The more this idea is applied in medical education, the fewer, we believe, will be our problems of curricula, sequence of study, time allotment, etc., and the easier their solution.

The above principle we would apply to pre medical as to medical studies.

1 —PRE-MEDICAL EDUCATION

In accord with the standard set and the principle just stated, we submit that the minimum pre medical standard should be the B.A. degree or its equivalent, or at the least two years in Arts, in which the foundation is strongly and adequately laid in the basic sciences of Physics, Chemistry and Biology. The question arises of whether they be taught as pure science entities or with some reference to their clinical application. We prefer the latter, but this is secondary to that of obtaining the correct mental training already referred to.

2 —UNDERGRADUATE MEDICAL EDUCATION

This, as already indicated, should aim at producing a well equipped general practitioner, and not a type of medical graduate who is partly specialist in one or more lines, unless possibly, in the occasional case of one taking a medical course to qualify for an institutional service, e.g., Psychiatry or Public Health. The great public demand, it would appear, is for the general practitioner trained to think properly (scientifically if you will). Thus trained and taught in correct habits of thinking he has a basis of such quality and quantity that he can pro-

REPORT OF THE COMMITTEE ON LEGISLATION

Mr Chairman and Members of Council —

The personnel of the Committee was the same as last year

In our last report we urged uniformity in medical curricula and degrees. Our meaning was misinterpreted. We did not advise standardization (a thing as undesirable as it is impossible) but rather that there should be a definite minimum requirement demanded of each teaching institution and that the qualifying degrees conferred on the completion of the minimum course should be the same throughout the Dominion. We still hold this opinion and would again urge that some attempt be made to have the universities adopt similar degrees for similar courses. Further, as the question of medical education and licensure are active topics at the meetings of the Medical Services of Canada, we suggest that our Committee be represented at their next meeting.

Our work for this year has included an attempt to pave the way for the introduction of a common final examination for both qualification and license. We sent a circular letter to the Dean of each medical faculty and also to the Registrar of each provincial college. The plan suggested was that the University and Medical Council examiners should sit together on subjects common to both examinations. Additional subjects demanded by the University could be cared for by university examiners. In this way the individuality of the University is safeguarded but the student is spared the necessity of presenting himself before two or more similar examining bodies. The role of examiners might well be dropped by the provincial colleges and their place taken by the Medical Council of Canada.

We received replies from nearly all the Deans and almost without exception the answers were favourable. We mentioned the desirability of conforming as closely as possible to the medical polity of Great Britain. Our correspondents gave us reason to believe that throughout the Dominion there is a great and sincere desire to bring about in Canada a practice similar to that obtaining in the British Isles.

At our meetings we have sought to devise a scheme which would bring the Medical Council of Canada into a position analogous to that of the General Medical Council of Great Britain. We feel that this should be done but have nothing definite to report on the subject at present.

We had one communication regarding the irregulars. This was from New Brunswick which specifically in its Medical Act accepts Osteopathy. The other provinces had nothing to report regarding them.

We have received no information regarding any charges which have been made in Medical Acts with the exception of certain projected legislation in Alberta. A bill was introduced there which would inflict upon the profession the indignity of having its members disciplined by a lay board from whose decision there is no appeal. We communicated with the local members. What action has been taken we are not able to report at this time.

We notice that other committees of the Canadian Medical Association occasionally deal with legislative matters. We would suggest that in these circumstances we be allowed to give our assistance for the same problem may have already been considered by ourselves.

During the past year our function as a committee has become much clearer to us. As we see it we have two duties—the one to endeavour to secure modification in the existing acts and the other to scrutinize legislation being considered in the various provinces. This latter function is the more important. It is indeed of supreme importance. The passing of undesirable legislation has a far reaching effect. The fact that one province has adopted a law encourages other provinces to follow suit, and so, unless we succeed in blocking the passage of one bill, we are likely to find ourselves confronted with nine acts, to modify which would be almost hopeless. Viewed

in this way our Committee becomes of supreme importance and therefore we seek its general recognition as a Committee of Safety which should be notified of, and consulted regarding all medico legal matters whether provincial or federal.

All of which is respectfully submitted

G S FAHRNI,

Chairman

Approved

REPORT OF THE COMMITTEE ON MUNICIPAL PHYSICIANS

Mr Chairman and Members of Council —

Your Committee on Municipal Physicians begs to report as follows —

Pursuing similar methods to those of last year, a communication was directed on February 7th to the different members of the Committee, which comprises medical men in each of the nine Provinces, advising that a report was desired by the Canadian Medical Association by April 15th and suggesting along what line a report might run. Four questions were asked, viz

- (1) What is the condition of medicine as practised now?
- (2) What good points are there in it?
- (3) What is there about the present system that could and should be improved upon?
- (4) If you think it could and should be changed in some way to better the service rendered to the public and also to make it more congenial to the men in practice, what suggestions have you to offer along the lines of a change which might include partial or complete State Medicine?

Many of the members of the Committee have replied, some very briefly and offering no suggestions, while a few have gone very thoroughly into the whole subject, and have offered comment and suggestions which have been included in this report. There have been many evidences during the past few years that go to show a feeling of unrest in the minds of the people in regard to this question of health, a desire for some change which appears to have arisen out of a wish to obtain the best in the way of diagnosis and treatment, and at a cheaper cost. The question is, can any change be made without sacrificing much that is priceless both to the patient and to the practitioner as well. It is, perhaps, at first sight, easy to see and suggest new things and to discard some of the old, but will others have to go which are of vastly greater importance? At any rate it would seem necessary to decide that this question of a change is a live issue and should and must be faced, or that it is no issue at all at the present time. Our opinion is that it is a live issue and is now right on top of us, and it is up to the Canadian Medical Association to take steps to prove one of two things and to convince the public of the same—either that the present system is entirely the right one and needs only a little elaborating, or in the event of some change, that we are the ones to give it to them in the proper form.

At this juncture let us point out that it was felt to be a fact that your Committee was not in a position to set out reasons, in a convincing manner, which would satisfy the public on either the one stand or the other, but have arrived at certain conclusions which will be summed up at the end of this report. This brings us to the second part of our report, which has to do with the opinions gleaned from the members of the Committee from the different Provinces, and for the sake of convenience, we shall start at the West and move to the East.

Dr H E Ridewood, writing from Victoria, B C, has to say

"This is a very live issue just now. The British Columbia Government at its recent session has ordered an inquiry into the question of health insurance and

maternity assistance. Also the Dominion Government is considering insurance against unemployment, and also Health Insurance.

He goes on to say that the British Columbia Medical Association had adopted as a basis of possible change the report of Dr J H MacDermot. This report is included here for reference purposes, and because it expresses the consensus of opinion in the Province of British Columbia.

Also we are including in its entirety the letter from Dr H E Young, Provincial Health Officer for British Columbia, because we feel he has given a great deal of thought to the subject and his letter is valuable in that it gives reasons for the undoubted unrest and at the same time offers sound suggestions which may be helpful to any future commission dealing with the question. His letter reads as follows—

"In my opinion the criticisms that are being offered are founded on the idea that the charges for being sick are far beyond the means of the average man to pay. This idea is being fostered by those who will benefit by such criticisms of the medical profession, more especially the members of the many cults who are preying on the public.

"The medical profession receives very little credit for the amount of work that they do without the expectation of getting any pay, and also the public have no idea of the number of bills that are not paid, owing by those who are perfectly able to pay.

"If a man is ill and is sent to the hospital, on recovery he receives a bill from the physician and also one from the hospital. These, added together, make an amount which is probably much larger than any bill that this man is accustomed to receive. He immediately raises the cry of extortion.

"If this same man were to go to, say, a chiropractor, he pays for each visit and the amount is not of moment as he is accustomed to paying small bills, and it never occurs to him that, if he were to take an extended treatment and get his bill in a lump sum, it would probably be much larger than that rendered for regular services by a practitioner.

"On the other hand, those of us who are in a public position and dealing with the public, have the opportunity of knowing that present day charges are absolutely beyond their power of payment, and the doctor and hospital suffer, or the patient goes without attention unless it becomes absolutely necessary. The majority of these people are good citizens who abhor the idea of charity and who are willing to make an effort to pay a moderate bill.

"It is this class of people that constitutes the bulk of the tax-payers and they feel that they are paying to maintain institutions from which they derive no benefit. They also feel that, if some arrangement could be made by which a stated sum or tax would be imposed upon them, they would willingly pay it in order to enable them to go to a hospital feeling that they were contributing their share for maintenance, and they were not going as charity patients.

"They pay a school tax and the children get the benefits of education, but they do not feel that they are accepting charity because they are not paying fees directly to the school, and the danger to the profession is the fact that the public may take the bit in their teeth and pass legislation providing for some measure of relief. If they do attempt this procedure, the result will be a hasty legislation which probably will not attain the object and will be a subject for acrimonious dispute for years, until finally it is adjusted to a workable basis.

"I do not think that the medical profession as a whole realize the intensity of the feeling on this subject amongst the public. The public are inarticulate but some one will come along looking for political power and will use some such scheme as a bait for votes, and I think the profession as a whole should awaken and endeavour to impress upon their respective governments that they are only too anxious to co-operate with them in an attempt to arrive at some solution of the pressing problems that are continually being presented to the governments.

"If a state tax were instituted, it should be on such a basis as would provide an amount that would give to any man or his family hospitalization, including laboratory, x ray, and all other services for which extra charges are made. Any practitioner would have the right to write a prescription for an x ray, laboratory services would be free, as also other departments which are considered more as an adjunct to the hospitals for which extra charges are made over and above bed fees.

"My suggestion would be that the medical fee should not be included in this. This would preserve the right of the patient to select his own physician, and what money he would have to pay out would be for his medical attendance. It would also preserve the right of the physician to accept or reject a case.

"A great change has come over hospital work in the past thirty years. We know, and the general public will admit, that medical science is a highly complex affair requiring special buildings and a highly trained staff. Anesthetics and antiseptics have made surgical treatment available for considerably more than half of all cases of serious illness. x rays have rendered it possible to make diagnosis and prognosis certain, in many cases where formerly these were only guess work. The clinical laboratory has been evolved, and it is now no exaggeration to say that the examination and treatment of sick people is an exact scientific process, requiring the collaboration of many highly trained persons.

"Neither the public nor the profession are adjusting themselves to these advances, nor has provision been made for the financial requirements.

"A health tax would pay for all this and the result would be that the public and the profession would both benefit, the one by receiving all these services and the other, the profession, by being placed in a position where they could procure these freely and without consideration of the patient's ability to pay. The health tax would pay for this and the patient would pay for his doctor."

Letter from Dr Proctor, Vancouver, B C

"For some time, both our own profession and the general public have been realizing more and more that the present system is not productive of the greatest good either to the public or to the profession. People who have money can get all the treatment they need. The poor often go without it until too late and when they do seek it, the cost is often a tragedy for a little family and burdens them with a financial obligation from which they do not recover for years, if ever. The growing conviction of the profession in British Columbia is that some system should be devised under which every one in need of treatment should be able to get it at a fee within the means of every one, and that some modified plan of state medicine should be devised for all who possess less than a certain income—a scheme that could function for illness as the present Workmen's Compensation Board does for accidents.

"The advantages of such a scheme are obvious. A great deal of consideration has been given in this Province to the question, and following is a draft of proposals which received the endorsement of the profession of this Province through the kindness of Dr J H MacDermot, who has done a great deal of work on this question.

PRESENT MEDICAL SYSTEM

Advantages—

- "1 Choice of medical man. Every patient wants this right. It leads to wholesome competition among medical men. This is good in any kind of business.
- "2 The doctor is paid for work done—as in every other business.
- "3 Under our present system, nobody suffers as a result of poverty—the poor, in fact, have many advantages over the man of moderate income.

Disadvantages—To the doctor

"Loss of income. Many people cannot pay our fees,

many can only pay part. Much work is done free in hospitals, etc.

"Inability to do the best work in many cases on account of the expense entailed to a patient who simply cannot afford it.

"Patients do not come at the best time, namely at the onset of illness for fear of bills.

Disadvantages—To the patient

"Modern medicine if properly practised is expensive, and cannot be otherwise. The only the rich and the indigent can get the whole gamut of medical skill. The man of moderate income has to go without or contract bills that are a heavy burden.

"There is no room in the ordinary wage-earner's budget for more than very moderate bill. Pull the other way than they would be if every one paid. Those who pay, pay more because of those who do not.

"There is no provision for time-loss, and the wage-earner has financial worry added to illness.

The sickness in a community is not only a burden, but affects the whole community in many ways. Infectious disease is a notable example, but all diseases have a relation to environment. There is no doubt that the cost of illness over a community is considerable, and if the above principle were recognized.

Insurance against sickness is a very expensive and beyond the means of the working man. It is a high percentage in this group.

"Undoubtedly, it is a sound principle that a certain proportion of the wage-earners' income should be set aside for illness and loss of time. But to do this, if done at the group is sufficient to "large" and if it is compulsory is only thus. In the end, if any such scheme be kept within bounds, it will be an insurance of sickness insurance with a contribution board, (about 50%) with the other wage-earners' contribution board, (about 4%).

REMEDIES SUGGESTED

"1. Panel system, as in Great Britain. This system in many ways. Too limited to provide a complete service. The cost is too high for the doctor.

"Does not provide payment for the doctor, but pays by capitation fee.

"Medical profession here is not opposed to the system for all these reasons.

"2. System of municipal health officers, as in the Province of Saskatchewan. This might work well in certain farming areas, small towns, etc.

"3. Extension of the Workmen's Compensation Board Act principle—as at present in British Columbia. This follows the present system of medical practice more or less exactly, and is satisfactory to patients, as well as medical men. It does provide a complete service, and takes prevention into account.

OTHER CONSIDERATIONS

"Preventive medicine is, as all will agree, of vital importance. This can only be done by skilled men, and otherwise there is the imputation of self-interest, and some danger of abuses. Moreover, a special training is necessary. Thus periodic medical inspection should properly be done by trained men, who would do no private practice, but would refer patients to a practising physician for treatment.

"Any system introduced should—

- (a) Be complete. It should provide for specialist, full laboratory examinations, hospital, etc.
- (b) Follow our present system as closely as possible, to avoid dislocation and mistakes.
- (c) Be compulsory for all wage-earners within certain limits—to be determined.
- (d) Include, if possible, benefits for maternity, and for time-loss in the case of the wage-earner.

- (e) Be capable of variation to meet the diverse needs of different parts of the community.
- (f) Take into account an apportionment of the cost between patient, employer and State.
- (g) Only be adopted after the fullest consultation between all parties concerned—Labor, Wage-earner and the State.

"Possibly it would be wisest to do it gradually, as applied to an experimental group, as a laboratory experiment. This would minimize the danger of error taken.

The Alberta Member of the Committee had applied at the time this report was made out but was noted that the Government of Alberta has also made an inquiry into the matter of State Medicine at its Law Office.

(Note—Alberta goes further than British Columbia and speaks of State Medicine.)

In the Province of Saskatchewan, as was pointed out last year, we have in our R. M. Act the power given the Municipality to engage a physician on full-time basis to grant a bonus to retain a physician in a district. There are now more than a physician in the Province engaged under this system. A communication addressed to the members brought replies from even of them. They found things working out, but as to the method of the problem. In general way the valuations were wished at the same time pointing out the perils of over-valuation, such as being too tied down and having many unworkable calls, and that the remuneration was not adequate, though better than the present in a poor district. Most of them would prefer to practice as before, could they finance such.

During the past year another step in the direction of State Medicine came in the form of a resolution of the United Farmers asking the Government to take steps to give them a state consultative clinic. This is a full and complete resolution. The Government has not yet decided on this, but it is a step in the right direction. It would be followed by the call for free treatment. The Government has not yet decided on this, but it is a step in the right direction. It would be followed by the call for free treatment. The Government has not yet decided on this, but it is a step in the right direction. It would be followed by the call for free treatment.

Manitoba has not been heard from this year since the time of the making out of this report.

Dr. O'Brien—Dr. John W. S. McCulloch has suggested questions in such a clear and concise manner that it has been considered best to print his "State Medicine" just as given, which is herewith.

"(1) What is the condition of medicine at present now?

Unsatisfactory, in some respects, both for physician and patient. The medical practitioner does too much work for which he is insufficiently remunerated, and is remunerated at all. In areas distant from medical centres there is much hardship, particularly in women and children and preventive measures are lacking.

In large centres the poor receive good service in the hospitals. The middle classes are scarcely attended and a considerable portion of the population in all communities either have no medical attention or attention is delayed when it would be most effective.

(2) What good points are there in it?

The general practitioner who, so far as the element in the practice of medicine has the best opportunity to render effective aid to his patient because he knows the patient's history, environment, and so on. He may, in the course of his professional life, know intimately, at least, two generations of people.

"For the every day ills of life the family doctor is the most valuable medical aid obtainable. Nothing is particularly in small urban and rural areas can take its place.

"But his help in prevention of disease is not utilized because outside of urban centres there is no leadership in methods of prevention such as that afforded by a whole-time, trained medical officer of health

"(3) What is there about the present system of practising medicine which could and should be improved?

"Medical aid should be made readily available to those unable to pay for it, or for whom it is not now available, by a system of state insurance, made to approximate as closely as possible to that of private practice, to which the individual of below a certain earning power, the employer and the state should contribute. In any scheme of the kind the national or provincial body of physicians should have adequate representation on the administrative body, and the physician's remuneration should be approximately that which he receives in ordinary practice so as to ensure a continuous supply of the best type of practitioner

"In the interest of the state, and of the public in any system of state medical service, the greatest emphasis should be placed upon the maintenance of health and prevention of disease. The medical officers of health should in all cases be whole-time trained men in areas of such size and financial resources as to,—

(a) Fully employ their time

(b) Foot the bill, with the assistance of both Dominion and Provincial Governments. Only in this way will that most desirable co-operation between the medical practitioner and the medical officer of health be gained

"All practitioners of medicine (the so called irregular as well as the regular) should be placed by the State on the same footing as to education and training. It is neither in the interest of the public nor of the physician to allow practise of medicine by persons of questionable qualification, who attempt to treat, for example, the communicable diseases by methods dangerous to their patients, particularly in the case of children."

From Quebec—Dr Lessard stated he had nothing to contribute

From Nova Scotia—Dr Jost gives the following very pertinent remarks

"As I see the condition, however, I can best explain it by a hunting simile. You know they say that some guns string their shot. A few go fast and far while the bulk of the load trails on so far behind that it is useless. I believe that medicine is stringing its shot. There is too great a distance between the leaders and the tailenders. The provision of hospital facilities, the trek of people in the cities, including the physicians, competition and personal ambition are placing a few in the extreme forefront while the majority trail behind, too far behind. As you know, from the point of view of the patient, each succeeding year the cry which they are making is growing in volume. They say that two classes are getting good treatment—the rich for pay, and the poor, or a few of them, for experience. The vast bulk of the people between these two extremes are becoming more and more restive each year. What I fear is that the people themselves will make the change, not the physicians."

From New Brunswick—Dr Melvin asked to be excused from acting on the Committee. However, he ventures certain statements which are included

"Your letter of February 7th, informing me that I was on your Committee, was a surprise and I think must be an error. For some years past I have not been even a member of the Canadian Medical Association, nor is it at all probable that I shall resume my membership

"However, I beg with great respect to congratulate your Association upon the courage (I will not say hardihood) displayed by it in its laudable attempt to reform this four-thousand year old profession that still projects itself into the twentieth century."

From Prince Edward Island—Dr Jenkins stated he was sure the Province of Prince Edward Island would acquiesce in any suggestions and improve the larger body

Dr Neville E Challenger, Pathologist to the Regina General Hospital, has contributed a very fine exposition of the Panel System of Great Britain, which so thoroughly explains its workings and gives in so much detail attendant evils of it that it has been forwarded as an appendix to this report, so that it may be in the hands of the Executive as a useful collection of first-hand information, gleaned while in contact with the system in England. A perusal of Dr Challenger's paper will go to show that the possibilities of disintegration and degeneration in the ranks of the medical profession are very great and all effort should be put forth to prevent any such influences entering our midst

In conclusion Taking into consideration what information we have been able to glean from all sources, we have come to certain definite decisions

1 That there is unrest on the part of the public

2 That the urge for change in the application of medical science is here and more apparent in some parts of Canada than others

3 That while there have been many changes in our social structure and also many changes within the science of medicine itself during the last quarter century, there has been little or no change in the method of applying it

4 We are certain that the time has arrived when it is necessary, as has already been said, either to prove to the public that what we are now offering is best, or, in the event of deciding that this is not the case or cannot be proven to be such, then, to prove to them that the Canadian Medical Association is both willing and able to give them whatever changes are necessary to meet their requirements

We would, therefore, respectfully urge that Council consider the immediate formation of a Commission to look into the source, origin and causes underlying the present public unrest and dissatisfaction with the practice of medicine as at present applied, and that sufficient money be secured to keep this commission at work during the entire year if necessary, and, for this purpose, the assistance of the Governments, both Federal and Provincial, might with propriety be asked, for the reason that it is a subject of vast importance to the public at large, involving the interests of the people possibly more than the profession itself

All of which is respectfully submitted

D S JOHNSTONE,

Chairman

Approved

In connection with the Report on Municipal Physicians, Dr H H Murphy presented the following reference to Health Insurance in the Province of British Columbia—

"Reference was made in a recent issue of the Labour Gazette (page 1278) to a movement in British Columbia in the direction of a provincial system of health insurance. During December, the advisory board to the Farmers' Institutes of the province submitted to a convention of that organization proposals for the inauguration of a province-wide state health insurance scheme on a contributory basis, for the benefit not only of farmers, but of all workers who are not protected by the Workmen's Compensation Act. The Board suggested also the provision of medical service for people in rural districts, particularly for maternity cases and for children. The adoption of health insurance as a general state measure was advocated by Mr E S H Winn, G

of the Workmen's Compensation Board of this province, in the course of an address to the New Westminster Board of Trade in December Mr Winn stated that health insurance had already passed the test of experience in countries where it had been tried. Moreover, the proposal for a provincial system, he said, had been approved by doctors, trade unions, hospital boards, and various societies and organizations in British Columbia. Discussing the principles of health insurance, Mr Winn pointed out that the province might properly undertake to promote public health as a national asset, and expressed the opinion that such insurance should not be conducted for profit. Many large concerns in Canada, including the railways, considered it good business, he said, to conduct their own insurance schemes. A provincial scheme would be the means of spreading over the entire population the losses due to ill-health. At the present time, he stated, less than one-third of the various hospitals were able to pay for their treatment and maintenance.

After considerable discussion on the Report of the Committee on Municipal Physicians it was decided that a Sub-Committee composed of Doctors Geo S Young, G Stewart Cameron, J G FitzGerald, and H H Murphy, with power to add, be appointed to take steps to carry out the suggestions already approved by Council, as contained in the report of the Committee as far as this may be feasible.

REPORT OF THE STUDY COMMITTEE ON NURSING, OF THE CANADIAN MEDICAL ASSOCIATION AND CANADIAN NURSES' ASSOCIATION

Mr Chairman and Members of Council —

At the meeting of the Canadian Medical Association in Toronto, in June, 1927, I was appointed Chairman of the Joint Committee which was subsequently formed and named "The Study Committee on Nursing of the Canadian Medical Association and the Canadian Nurses' Association." The appointment of this Committee was the result of a conference held during the Canadian Medical Association meeting last year, of representatives from the Canadian Nurses' Association and Canadian Medical Association and members of some of the hospitals' executives of Canada. The Committee was to be composed of three representatives from the Nurses' Association, three members from the Canadian Medical Association and one—a layman representing the Hospital Boards of Trustees. The nurses appointed, as their representatives, Misses Jean Gunn, Superintendent of Nursing, Toronto General Hospital, Kathleen Russell, Director of the Department of Public Health Nursing, Toronto University, and Jean Browne, Secretary of the Junior Red Cross Society of Canada. The representatives of this Association are Dr A T Bazin, Montreal, Dr Duncan Graham, Professor of Medicine, Toronto University, and G Stewart Cameron.

To provide funds for beginning the study, the Canadian Medical Association set apart a sum not exceeding \$300 for the year's work and the Canadian Nurses' Association authorized a similar expenditure.

The Committee met early in September of last year and after organizing, discussed the various points upon which a study should be made and also the different methods by which this study might be prosecuted. A Committee, composed of the three representatives of the Canadian Nurses' Association, was appointed to draw up, in detail, a program of the proposed study to be submitted at the next meeting. This was very carefully done and was considered by the Committee at a meeting early in October. The unanimous view of the members present was that an effort should be made to consider fully the various points raised in the sub-committee's report, but that, in order to do so, an independent investigator trained along sociological lines should be secured. The appointment of such a person would require a sum of money far beyond that at the disposal of the joint committee. It was then decided that efforts should be made to secure funds sufficient to enable us to begin this study. At a meeting held in Toronto in March, we found that the various avenues through which we expected to secure money were closed to us. It was then decided that Dr Bazin should interview the Carnegie Foundation with a view to securing from them sufficient help.

Early in May, Dr Bazin had an interview in New York with Mr Keppel, President of the Carnegie Corporation. After a very careful survey of our problem, Mr Keppel stated that, our request was a very legitimate one and he was in sympathy with it, but, owing to the present exhaustion of funds available for Canada, he could not hold out any immediate prospect of help.

The Report of our Sub-committee was published in the *Journal* of the Canadian Medical Association in the December number so that we trust many of you may have familiarized yourselves with the outline.

In submitting this report to this Association, I desire to convey to you the thought that the nurses, as represented on our Committee, are extremely anxious that a very thorough study of the whole nursing problem be made and that it be made in co-operation with the Canadian Medical Association. Their sincere desire is to bring out the facts and upon the facts as they exist in Canada, plans can be made for the future development of the nursing profession for the needs of Canadian citizens.

All of which is respectfully submitted

G STEWART CAMERON,
Chairman.

Approved

REPORT OF THE COMMITTEE ON ECONOMICS

Mr Chairman and Members of Council —

During the past year no economic question of outstanding importance has arisen with the exception of Health Insurance, which is beginning to come into prominence through the agitation in British Columbia for legislation dealing with this matter.

The first note was struck by Dr H C Wrench, M L A for Hazelton, B C, who spoke in the British Columbia House during the session of 1926-27 and advocated Health Insurance. The next move was made by the City of Kamloops, which memorialized the government in favour of Health Insurance legislation and circulated all the municipalities, asking them to consider the resolution presented by Kamloops to the government. The question was brought up in the Legislature during the past session and it is stated that the government intends to appoint a committee to study the question during the year and report back at the next session of the Legislature.

Undoubtedly, public opinion in favour of Health Insurance is steadily growing in British Columbia and it would appear to be a natural sequel to Industrial Medicine.

which is now in full operation in most of the Provinces of Canada having appeared first in British Columbia. Health Insurance is being demanded more and more by a very large section of the community. It is to some extent in operation in such countries as Great Britain and Germany but we feel that the type of State Medicine that obtains in these countries would be totally inadequate in Canada. It has principles to which the medical profession of this country should never agree, inasmuch as payment of doctors is made by panels and the payment for work done is by a capitation fee. We regard both these principles as unsound and pernicious. However, no decision can be hurriedly made as the question is a tremendously big one. Any legislation must be more or less experimental at first. Strong efforts, we feel, should be made by the medical profession to ensure that they are consulted fully before any bill is prepared. We should recommend that the following points, especially, be kept in mind—

- 1 The Canadian Medical Association should take steps to keep in touch with the situation in British Columbia and to obtain expressions of opinion from other Provinces
- 2 Any committee formed should have representatives from both city and rural districts as the conditions in each locality will greatly influence the administration of any Act
- 3 An attempt should be made to keep in touch with Labour. The Trades and Labour Council of British Columbia has endorsed Health Insurance strongly and we feel that Labour should be approached by us and co-operation maintained at every step possible. The Dominion Board of Labour should be approached.

Other points will suggest themselves as time passes.

During the year a sub-committee has been engaged in drawing up recommendations with regard to Marine Hospital Acts under the leadership of Dr. C. W. Proulx of Vancouver. He has made his separate report and this need not be considered here.

All of which is respectfully submitted

J. H. MacDERMOT,

Chairman

Approved

It was suggested that the Committee on Economics be asked to bring in some recommendation whereby the taxation on members of the medical profession would be decreased.

REPORT OF THE POST-GRADUATE COMMITTEE

Mr. Chairman and Members of Council—

It will be noted that the figures given in this report cover the details of the Association's Post-Graduate work for the year ending September 30th, 1927. The expenses were met by the second grant of the Sun Life Assurance Company of Canada. A third grant of a similar amount, from the same Company, has enabled the Association to carry on since last September with results even more gratifying than those indicated by the following tables.

A study of these tables brings out several points of interest. The cost of administering the whole fund was about 13 per cent. In Quebec, where the work is conducted by a Provincial Committee requiring a secretary, the administration cost was about 50 per cent, in all the other Provinces combined, about 7 per cent.

There was an increase of one hundred speakers and of more than two hundred addresses over the year before. The attendance at lectures and clinics mounted to a total of 19,683, being an increase of nearly 2,500 over the previous year.

Notwithstanding these substantial increases in speakers, addresses and attendance, the total annual expenditure has diminished. It will be recalled that in the preceding year, there was a deficit of \$100 which amount was paid by the Canadian Medical Association. Perhaps this led your Committee to hew too closely to the line during the year of operation now reported. At any rate, increased experience has resulted in the saving of money here and there through the better routing of speakers and in other ways. Stated statistically, the cost per lecture per doctor has dropped from \$1.74 to \$1.46.

CANADIAN MEDICAL ASSOCIATION POST-GRADUATE FUND

REVENUE STATEMENT FOR YEAR ENDED 30TH SEPTEMBER, 1927

Expenditures

Balance	\$ 100.27
Speakers Expenses	22,731.75
Administration Expenses	1,779.56
Equipment	56.00
Quebec Committee	5,100.00
Balance	332.69
	<hr/>
	\$30,100.27

Receipts

Grant from Sun Life Assurance Co	\$30,000.00
Canadian Medical Association to cover deficit in 1926	100.27
	<hr/>
	\$30,100.27

FINANCIAL STATEMENT QUEBEC POST-GRADUATE COMMITTEE

FOR YEAR ENDED 30TH SEPTEMBER, 1927

Expenditures

Speakers Expenses	\$2,038.95
Administrative Expenses	2,005.68
Equipment	219.72
Balance	835.65
	<hr/>
	\$5,100.00

Receipts

Grant from Central Post-Graduate Committee	\$5,100.00
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SUMMARY BY PROVINCES OF POST GRADUATE WORK FOR THE YEAR FROM OCTOBER 1ST, 1926 TO SEPTEMBER 30TH, 1927

DISTRIBUTION OF SPEAKERS

Province	Number of Speakers	Number of Addresses	Cost
British Columbia	16	24	\$ 5,619.20
Alberta	12	82	2,557.89
Saskatchewan	10	148	1,977.35
Manitoba	17	48	1,753.48
Ontario	133	149	4,651.83
Quebec	40	61	4,264.35
New Brunswick	16	68	2,971.98
Nova Scotia	12	103	2,965.97
Prince Edward Island	12	41	1,687.46
Newfoundland	1	5	382.10
Total	269	729	\$28,831.66

A COMPARISON OF POST GRADUATE WORK CONDUCTED
BY THE CANADIAN MEDICAL ASSOCIATION DURING
THE YEARS SEPTEMBER 30TH, 1925, TO
SEPTEMBER 30TH, 1926, SEPTEMBER
30TH, 1926, TO SEPTEMBER
30TH, 1927

	1927	Compared with 1925
Number of Speakers	269	169
Number of Addresses	729	513
Average Attendance (per lecture)	27	29
Total Attendance	19,683	17,264
Total Cost	\$28,831 66	\$30,100 27
Cost per Lecture per Doctor	1 46	1 74

All of which is respectfully submitted

GEORGE S YOUNG,
Chairman

In order that the post-graduate department may operate to the best advantage in all parts of the Dominion, the provincial representatives on Council were urged to advise the General Secretary as to any changes which they would recommend in connection with the carrying on of this work in their respective provinces

REPORT OF THE LISTER MEMORIAL COMMITTEE

Mr Chairman and Members of Council —

At the request of the Lister Memorial Committee the General Secretary, Dr T C Routley, when in England, invited Sir Berkeley Moynihan to present the third Listerian Oration in 1930, on the occasion of the British Medical-Canadian Medical meeting in Winnipeg. Your Committee is very pleased to report that Sir Berkeley Moynihan has accepted this invitation and will be with us on that occasion.

It will be observed from the Treasurer's report that the Lister Fund is over subscribed and the proceeds well invested.

All of which is respectfully submitted

JOHN STEWART,
Chairman

REPORT OF THE OSLER MEMORIAL COMMITTEE

Mr Chairman and Members of Council —

Soon after the last annual meeting a meeting of the Local Nucleus was held in Hamilton. It was agreed that this Local Nucleus should be slightly enlarged and that an effort should be made to complete the organization of the Provincial Units according to the instructions of the last annual meeting. In this we have been largely successful with eight provinces so organized. In the Province of Saskatchewan, the work of this Committee is still under the direction of the Executive of the Provincial Association. All of the Provincial Units have advanced the organization work of this Committee by development within their respective provinces.

The following is a list of officers of Provincial Units —

BRITISH COLUMBIA

Dr W D Keith, *Convener*, Vancouver,
Dr J T Wall, *Secretary*, Vancouver

ALBERTA

Col F H Newburn, *Convener*, Edmonton,
Dr Duncan Smith, *Secretary*, Edmonton

MANITOBA

Dr D A Stewart, *Convener*, Ninette,
Dr G A Barager, *Secretary*, Brandon

ONTARIO

Dr J H Mullin, *Convener*, Hamilton,
Dr J W Tice, *Secretary*, Hamilton

QUEBEC

Dr Campbell Howard, *Convener*, Montreal,
Dr Maude Abbott, *Secretary*, Montreal

NEW BRUNSWICK

Dr G C Van Wart, *Convener*, Fredericton,
Dr Chas MacKay, *Secretary*, Fredericton

NOVA SCOTIA

Dr W H Hattie, *Convener*, Halifax,
Dr A C Jost, *Secretary*, Halifax

PRINCE EDWARD ISLAND

Dr J A McPhee, *Convener*, Summerside,
Dr I J Yeo, *Secretary*, Charlottetown

In addition to these a few members of the profession, non-residents in Canada, have been named by the Local Nucleus as "Members Extraordinary" of this Committee and have been invited to give criticism and advice. Archibald Malloch, Joseph Pratt, Leonard G Rowntree, and Donald McEachern. At a later date it might be found advisable to enlarge this list considerably.

It has been decided not to proceed with the organization referred to in the Supplementary Report of last year until the money for the Osler Oration (Objective, \$5,000) is in hand. Tentative plans have been considered, but the time has not arrived for developing these. These plans, however, will be available for the future work of this Committee. A very attractive offer to establish a Scholarship under the auspices of the Association was presented to Committee for consideration. We believe the time has not arrived when the details of this proposal should be presented to the members. Such action should be delayed and the proposal placed in the hands of the Section on Osler Scholarships as soon as the same is organized.

After the development of the organization of the Provincial Units, those who had been previously named as corresponding members were expected to continue to act through the organization of and as members of their respective Units. Correspondence was carried on only through the officers of the Provincial Unit.

It has been agreed that the Quebec Provincial Unit should be given the responsibility of the organization for the first Oration, the year in which it should be given, and all other details.

Arrangements were completed for a Dominion wide campaign in the late Autumn to collect the necessary funds for the work of this Committee. A copy of the last Annual Report, Subscription Form, Return Envelope, together with a short covering letter, were sent out to a list of approximately seven thousand members of the Profession, in active work in Canada.

A Progress Report of our Committee was made to the Executive at its meeting in November, in Montreal, and Dr Campbell Howard was asked to present the same and any recommendations from the Quebec Unit.

The following resolutions were received and endorsed by the Executive Committee —

RESOLVED That this Committee recommend to the Executive of the Canadian Medical Association that the first Osler Oration be given in Montreal at the annual meeting of the Canadian Medical Association in the year 1929, and that Dr F J Shepherd be

asked to deliver it, and, further, that this Committee does not approve of a symposium on this occasion

RESOLVED That the Canadian Medical Association be asked to arrange a Section of History of Medicine on the program of its annual meeting, or, failing this, to provide for at least one paper treated from the historical standpoint

Following the meeting of the Executive, arrangements were completed through the Treasurer, Dr. Bazin, whereby the Treasurer's offices opened a special account known as "The Osler Memorial Fund" with the understanding that as quickly as possible these funds would be invested. The arrangements provided that the collection of funds would remain entirely in the hands of the Osler Memorial Committee, who should pay all charges, (exchange, stamps and on drafts). Net proceeds were transferred to the Treasurer in amounts exceeding \$100, leaving a small balance on hand in the local bank.

Subscription pledges for the Osler Memorial Fund now reach a total of \$3,709.02, of which \$3,325.00 has been placed in the hands of the Treasurer of the Canadian Medical Association for investment. One subscription of \$200 has been received from an anonymous contributor, who, we understand, is a member of the Association in good standing, and another subscription whereby \$5.00 a year has been turned over to the Committee in perpetuity.

The following table shows the amount of the money received in paid up subscriptions, the number of same (N.S.) in each province, and the medical population (M.P.) of these

Province	M.P.	N.S.	Amount
British Columbia	612	9	\$ 90.00
Alberta	566	11	170.00
Saskatchewan	554	18	195.00
Manitoba	529	27	265.00
Ontario	4,000	112	1,172.00
Quebec	2,400	46	985.00
New Brunswick	264	13	150.00
Nova Scotia	516	15	146.00
Prince Edward Island	65	16	125.00
Total	9,506	267	\$3,293.00

To these, of course, will be added the anonymous contribution, and other subscriptions amounting to \$120.00 from other than members of the profession in Canada.

There must surely be a large number of men interested in Osler who would like to contribute. In order to carry on the work of the Committee there should be a fund of at least \$10,000.00. The amount received over and above the money necessary for the objective of the Oration will be needed in order to supply funds for the Secretarial work in continuance of the Committee's work. The cost of Secretarial work for this Committee, and its various Units, is surely a just charge on money collected for this purpose.

Considerable correspondence has been carried on with the other Provincial Units, but as yet we have not received actual minutes of meetings held. Nevertheless, we have every reason to believe we have aroused a widespread interest, and indications of developing activity may be judged from the following —

British Columbia requested an additional supply of reports and subscription blanks, which the Committee used for a second direct appeal. Their Committee consists of the active officers of each of their district Societies.

In Alberta at the last annual meeting of the Provincial Association the following resolution was passed —

"That this Association ally itself with an establishment of the Osler Oration, and direct the Nominating Committee to suggest a slate of the Alberta Branch of the Osler Memorial Committee of the Canadian Medical Association." An energetic and enthusiastic Committee was appointed that promised to assist in any work they may be called upon to do.

From Saskatchewan we have assurance that, as the matter is in the hands of the Executive of the Provincial

Association, we can confidently anticipate their active co-operation.

From Manitoba we quote at length from the memorandum sent out throughout the Province —

"I am sure there is just one opinion among medical men in Canada about rendering homage to the name and work of Sir William Osler, about keeping his memory and example green, and, so far as we can, keeping his fine spirit still living among all the practitioners of medicine in Canada.

"A world figure in medicine, the greatest of his day, there may well be monuments of some kind in many countries. But he was a Canadian and had all his roots in Canadian soil, birth, early life, school, teachers, inspirations and training. When he left Canada he was already a man of mark, and Canada had always a large share in his life and work. He was known while yet a Canadian to many of our middle aged and older members, and to a great many of the younger men was a friend and helper overseas.

"He was essentially a stimulator of medical men. In remembering him we keep before ourselves as high an ideal of study and practice and spirit as we could find embodied in any great physician of any time or any country, from Aesculapius to the present day."

In Ontario, in addition to the work of the Local Nucleus, a special meeting of all the members of the Committee from Ontario was held, and plans laid out for the program through which it should be possible to reach members in all of the large centres.

In Quebec special arrangements have been made for second canvass by the members of their Committee. One member has undertaken to make a special appeal to the French speaking members of the profession in that province.

The New Brunswick Committee requested special letter paper with which to make further appeal throughout their province and this has been placed at their disposal. We believe this campaign is well under way.

In Nova Scotia all the local medical societies have appointed representatives to the Provincial Unit, and also one was appointed by the Osler Club in Halifax. The Provincial Health Officer, who covers the province in his official duties, is an active member and will undoubtedly use every opportunity to assist the Committee.

From Prince Edward Island we have every assurance from the President elect, and the officers of the Unit, that the fund will meet with a generous response.

There should be no reason for discouragement at the present stage in the collection of these funds. Even now the work of the Committee is still in a preliminary stage. More intensive work must follow and it must be made possible by a further development of the organization under the direction of each Provincial Unit, so that it will reach the various Provincial Associations and the various local Medical Societies. Through these local societies it will then be possible to make a personal appeal to individual members of our profession. After the budget for the Oration has been collected from the profession in Canada as stipulated in last year's report, there should be no objection to making an appeal to the various provincial Councils, and other sources outside our own ranks.

It should not be a difficult matter to reach the required amount, providing we receive the complete co-operation of the officers and members of our Committee and its various Units, those who have already subscribed and a much larger list of the members of the profession throughout Canada who should be interested.

We not only need their financial assistance, but we should develop, what is much more important, a real interest in the life of Osler, his work, and the various phases of medical work in which he was interested.

We, therefore, recommend that this Committee be continued and instructed to develop the organization to these ends.

All of which is respectfully submitted

J. HEURNER MULLIN,
Chairman

Approved

Later, the Executive Committee, in considering certain correspondence received from the Chairman of the Osler Memorial Committee passed the following resolutions —

1 That 2,000 reprints of the Osler Memorial Committee Report be sent the Chairman of the Committee for distribution

2 That the Chairman of the Osler Memorial Committee be advised that he has power to conduct the work of his Committee as he sees fit, and that any expenses incurred in so doing will be a charge upon the funds collected, also that no expense shall be incurred for work other than that directly involved in bringing the fund up to the required amount of \$5,000

REPORT OF THE CONFERENCE ON THE MEDICAL SERVICES IN CANADA

Mr Chairman and Members of Council —

Our report, dated May 7th, 1927, on the second conference on the medical services in Canada, held in the House of Commons, Ottawa, in March 1927, was duly presented and adopted at the annual meeting of the Council of the Canadian Medical Association held in Toronto in June 1927. The very great success which was attained by that meeting of representatives from all the provinces of Canada was duly stressed in the report. Much was accomplished in correlating the various activities in the medical service in Canada and in creating a determined effort to improve, by continued effort, the efficiency of the service rendered by the medical profession throughout our country.

The whole hearted support rendered the Conference by Dr J H King, the Honourable Minister of Health for Canada, and his colleagues in the Federal Department of Health, is a matter of distinct gratification to our Association. Our sincere thanks are also due Dr King for having arranged for the publication of the full proceedings of the Conference in booklet form, 3,500 copies having been distributed to the members of our Association throughout Canada.

It may be noted that the first conference at Ottawa, which was also an unqualified success, met in December 1924. There was an interval of two years and three months between the first and the second conferences.

Having in view the value of these conferences, which has been so effectively demonstrated, it would be well for the Council of the Canadian Medical Association to consider the advisability of organizing a third conference, and making provision for it at a future date.

All of which is respectfully submitted

A PRIMROSE,
Chairman

Approved

It was reported that exception was taken by another organization to the use of the term "Medical Services in Canada" in connection with this Conference, on the ground that this nomenclature had been adopted by them some years ago. No action was taken in the matter.

REPORT OF THE COMMITTEE ON MEDICAL SURVEY OF CANADA

Mr Chairman and Members of Council —

Your Committee on Medical Survey of Canada begs to report as follows —

RATIO OF PHYSICIANS TO POPULATION

The number of doctors in Canada in the year 1924 was 1,100 less than in 1921, according to the report of the Federal Department of Health. This decrease was caused in part by (1) removal to foreign countries (where distant pastures look green), (2) deaths among the profession, (3) retirement from practice because of physical disabilities or other causes. The total from these three causes was lessened by the number of graduates who located in Canada during this period. Unfortunately, your Committee is unable to give any information regarding the relative importance of the above factors.

In 1921, the medical population numbered 8,706 and the civilian population, 8,775,853, or one physician to approximately 1,000 people. In 1924, there were 7,606 qualified practitioners, and an estimated population of nine and a half millions or one physician to approximately 1,250 people. In the United States, the ratio was 1 to 753 (1925), in Great Britain 1 to 1,089 (1921), in Switzerland 1 to 1,300 (1925), in Germany 1 to 1,942 (1912) and in France 1 to 2,833 (1912).

The following statistics are submitted for your information —

<i>Provinces</i>	<i>Population (Census of 1921)</i>	<i>Number of Doctors (Census of Occupations 1921)</i>	<i>Number of Doctors (Report of Federal Dept of Health 1924)</i>
Prince Edward Is	88,615	68	67
Nova Scotia	523,837	457	381
New Brunswick	387,876	268	256
Quebec	2,361,199	2,216	1,896
Ontario	2,933,662	3,459	3,046
Manitoba	610,118	557	260
Saskatchewan	757,510	524	560
Alberta	588,454	548	605
British Columbia	524,582	609	535
Total for Nine Provinces	8,775,853	8,706	7,606

UNEQUAL DISTRIBUTION OF DOCTORS

When a country doctor is removed by death, his place is seldom taken by another practitioner and thus the family doctor is gradually disappearing—much to the disadvantage of the public. The recent graduate prefers to locate in the city and many reasons are given in explanation—the strenuous life of a country practice, the low fees, the desire for social life and educational advantages for the children, and the lack of modern hospital facilities. Some blame the medical curriculum, stating that too much emphasis is placed on the specialties and on research and not enough on the training of general practitioners which should be the main function of a medical school. The recent graduate fails at times to realize that he can practise scientific medicine in a rural community, and his special field, as pointed out by Sir James Mackenzie, is a study of the early symptoms of disease—the life history of diabetes ten years before coma develops, or of phthisis months and years before a cavity is manifest.

On the other hand, because of increased facilities for travel and communication—improved roads, automobiles, telephone, etc—there is less need for the country doctor in certain localities.

CANADIAN MEDICINE OF THE FUTURE

Before one could predict the medical requirements of Canada in the next ten or twenty years—and now is the time to prepare, because doctors cannot be turned out according to factory specifications—one should have information regarding such items as —

- (1) The estimated civilian population
- (2) The average age of the men now in practice and their expectancy of life

(3) The average number of deaths per annum

(4) The number of medical students and the number of licentiates

The average age of rural physicians in the United States, according to Pusey, was 52 in 1926, and their life expectancy was 19.4 years. In less than two decades practically all these men will have died and their places should be filled by recent graduates. (Pusey also stated that "country doctors can handle from 80 to 90 per cent of his cases," and that "there is too much worship of research.")

The following table indicates the number of medical students and graduates for the past six years

	<i>Students</i>	<i>Graduates</i>
1927	2,639	410
1926	2,556	517
1925	2,535	473
1924	2,672	629
1923	3,061	493
1922	3,229	434
Average	2,770	493

There has been a slight increase in the number of medical students during the past three years, although there has been a considerable decrease from the post war years.

Your Committee has sent to the members of the graduating classes of all of the Canadian universities, a complimentary copy of the Code of Ethics of the Canadian Medical Association with the hope that there may be established a more intimate relationship between the Canadian Medical Association and the younger members of the profession. Your Committee wishes to express its appreciation of the co-operation of the Deans of the Medical Schools who very kindly furnished the names and addresses of their students.

Your Committee begs to submit the following recommendations—

(1) That information be made available regarding the average age of Canadian physicians and the distribution of doctors in rural and urban communities.

(2) That efforts be continued to maintain contact between the Canadian Medical Association and the undergraduates of the Canadian universities.

(3) That more details be secured concerning the undergraduates and their subsequent professional life.

All of which is respectfully submitted

J. W. CRANE,
Chairman

Approved

In the discussion on this report it was suggested that the Association appoint a historian, whose duty it would be to compile all available details in connection with the Canadian Medical Association from the time of its organization. It was finally decided that this duty should be passed to the Committee on Personal Archives for attention.

A suggestion was also made that a student representative from each University be invited to sit in with Council at the Annual meetings, but it was decided by the Executive Committee that no action should be taken in this connection at the present time. The Executive Committee recommended that the General Secretary make use of every available opportunity of addressing the final year students in the medical faculties of the different universities.

REPORT OF THE COMMITTEE ON COLLEGE OF PHYSICIANS AND SUR- GEONS OF CANADA

Mr. Chairman and Members of Council—

Your Committee desires to report that, acting upon instructions received from the Association at the time of our last annual meeting and supplementary instructions from the Executive Committee, we have proceeded as follows—

1 We engaged the Association's solicitor to advise us on the preparation and presentation of a Bill to be introduced in the House of Commons, Ottawa, looking to the formation of the proposed College or Colleges, under Federal charter.

2 The Charter Fellows convened a meeting in the House of Commons, Ottawa, on February 23rd, 1928, when they had the privilege of discussing with the majority of the Doctor Members of the House of Commons, the proposed Bill. The discussion at that meeting showed that the members present were unanimously in favour of the establishment of the College, and pledged their hearty support to the Bill when presented in the House. The discussion was crystallized by the adoption of the following resolution—

That the whole matter be referred to all interested parties in the several provinces in order that, when the Bill is brought to the House of Commons, an intelligent and sympathetic reception will be given it by all the members of the House, who have been assured by those best qualified to advise them in their constituencies that the measure is worthy of whole hearted support.

3 The subject matter agreed upon to be incorporated in the Bill, together with the necessary preamble follows—

In view of the growth and development of medicine and its various branches, it is felt by the profession in Canada that a doctor essaying to do "special work" should have the opportunity of obtaining some distinguishing designation whereby the public may know that he has taken the various advanced studies that will qualify such for this work.

The Canadian Medical Association is fully aware that matters of education are entirely in the hands of the Provinces. The proposed College is merely a "diploma" conferring college and seems to be in the best interests of the people of Canada at large.

It would seem therefore, that there can be no reasonable ground for objection to the formation of the proposed College, which will in no way compete with nor interfere with the established educational institutions of the Dominion. The Canadian Medical Association, therefore, prays the Parliament of Canada to create such a College.

1 The College shall be entitled "The College of Physicians and Surgeons of Canada."

2 Those persons comprising the body of the College shall be known and designated as "Fellows of the College of Physicians," or as "Fellows of the College of Surgeons of Canada."

3 For the purpose of carrying out the process of incorporation a body of men has been appointed known as the nucleus of the "Charter of Fellows" of the College, the personnel being as follows—

Dr. F. N. G. Starr, *Chairman*, Toronto,
Dr. A. Primrose, Toronto,
Dr. L. J. Austin, Kingston,
Dr. A. T. Bazin, Montreal,
Dr. C. F. Martin, Montreal,
Dr. J. M. A. Rousseau, Quebec,
Dr. Geo. Hale, London.

The Body of Charter Fellows shall consist of Professors in General Medicine, General Surgery, Gynaecology and Obstetrics, who, at the present time, are actively engaged

in teaching in the universities of Canada. Provision shall also be made for the admission, without examination, for a period of one year from the date of incorporation, of those men who in the judgment of the Charter Fellows, are qualified.

4 Admission to the College, subsequent to the selection of the above two classes of Fellows, shall be by examination only, which examination shall be written, oral and practical, and shall be a severe test of knowledge, ability and judgment. The Fellowship thus granted by examination shall appertain to two classes —

- (a) Graduates of not less than three years' standing who shall be examined in all subjects named below
- (b) Graduates of fifteen years or more who shall be examined in the clinical branches only, by written, oral and practical examination, and who also shall submit a thesis. This privilege shall cease to be accorded on December 31st, 1942.

5 HONORARY FELLOWS may be selected from —

- (a) Outstanding members of the profession
- (b) Members of the profession resident in Canada who hold a degree of equal status to the Fellowship in Great Britain, or in France
- (c) Outstanding physicians, surgeons or scientists, resident outside of Canada, who have advanced the cause of science

6 In organizing the College and formulating By-Laws, it shall be provided —

- (a) That the business of the College shall be administered by a Committee of the Fellows who shall be elected by the Fellows of the College, and who shall be known as the Council of the College, and who shall hold office until their successors are elected
- (b) That this Committee shall be designated THE COUNCIL OF THE COLLEGE OF PHYSICIANS AND SURGEONS OF CANADA
- (c) The examination of candidates shall be arranged for and carried out under the direction of a Board of Examiners who are to be appointed by the Council, who shall hold office for not more than five years, and who may be re-appointed
- (d) Regulations shall be adopted for the formulating of such other By-Laws as may seem advisable, in addition to those provided for in this Recommendation, and also that regulations be made for the changing of any By-Laws, should circumstances render it advisable, in the best interests of the College
- (e) Regulations shall be made for the election of Members of Council and for their resignation and for filling vacancies, should such occur from any cause
- (f) The officers of the College shall be PRESIDENT, VICE-PRESIDENT, SECRETARY AND TREASURER (These two last may be combined). These officers shall be elected by the Council
- (g) The duties of these officers shall be properly set out in the By-Laws
- (h) Regulations shall be made governing the conduct of the Fellows and for dealing with any misconduct on the part of any Fellow
- (i) Regulations shall be made for acceptance of resignation of Fellows

7 (1)—In regard to admission to FELLOWSHIP by examination, no candidate shall be allowed to proceed to examination for FELLOWSHIP until he present to the Council of the College, at a time and in a manner to be set out in the By-Laws, satisfactory evidence of —

- (a) Having received a degree in MEDICINE AND SURGERY or either, from a University in Canada

In discussing Clause (a) of Section 7, a representative from the Province of Quebec recommended that the following words be added to this clause —

"And holding a Provincial or Federal License"

This was agreed to by Council

- (b) Having received a degree or registrable qualification in MEDICINE AND SURGERY, or either, from a university or licensing body, within the Empire or without the same, which has been recognized by the COUNCIL as having undergraduate courses equivalent in duration and thoroughness to those required for a degree in Medicine or Surgery, in the universities of Canada

(2)—For the FELLOWSHIP IN MEDICINE, the Candidate shall be examined in ANATOMY, including HISTOLOGY and EMBRYOLOGY, in PHYSIOLOGY, including BIOCHEMISTRY, in PHARMACOLOGY, (these may be taken as the first part of the examination), in PATHOLOGY, including BACTERIOLOGY, and in MEDICINE, including THERAPEUTICS and PREVENTIVE and FORENSIC MEDICINE. A candidate, on application, may be allowed to take his major examination in MEDICINE, or in PAEDIATRICS, in which case his diploma, if he is successful, shall indicate that he has taken this course. The practical examinations shall be arranged to demonstrate the candidate's ability in diagnosis and treatment.

(3)—For the FELLOWSHIP IN SURGERY, the candidate shall be examined in ANATOMY, including HISTOLOGY and EMBRYOLOGY, in PHYSIOLOGY including BIOCHEMISTRY, (which subjects may be taken as the first part of his examination), in PATHOLOGY, including BACTERIOLOGY, and in GENERAL SURGERY. If candidates apply, they may be permitted to have the major part of their surgical examination, (though they must have a knowledge of the principles of General Surgery), in OPHTHALMOLOGY, OTOLARYNGOLOGY, GYNÆCOLOGY, or OBSTETRICS, and in these cases, their diploma will indicate that they have qualified in this special course.

8 Provision shall be made that all the privileges and distinctions of the College shall be available to women on the same conditions and terms as to men.

9 Each candidate, before receiving his diploma, must subscribe to the following Declaration, or a similar one —

I do hereby solemnly and sincerely declare that I will maintain and defend all the rights and privileges of the College of Physicians and Surgeons of Canada, that I will not advertise or employ any unbecoming method of obtaining practice, or associate myself with any person who does so, that I will not publish any matter prejudicial to the interests of the College or derogatory to the honour of my profession. I also undertake to observe all the laws of the said College, made and to be made, under penalty of the forfeiture of my diploma, and of all rights I can legally demand as a FELLOW, and I will obey every lawful summons issued by order of the Council of the said College having no reasonable excuse to the contrary, And I make this solemn declaration by virtue of the provisions of the "Canada Evidence Act"

10 The Board of Examiners may refuse to proceed with the further examinations of any candidate who is reported to them as having failed in any of the subjects of the first part of their examinations.

11 Candidates for the FELLOWSHIP, failing to pass their examinations may not come up for examination again until the period of one year has elapsed.

12 Every APPLICANT FOR THE FELLOWSHIP must satisfy the COUNCIL as to his eligibility in every particular, prior to examination or admission.

Your Committee further desires to report that it has disseminated to the interested parties all the information embodied in this report, and hopes to obtain, in the not far distant future, expressions of opinion, which will enable us to proceed to introduce the Bill at the next session of the House of Commons, confidently anticipating its passage

All of which is respectfully submitted

F N G STARR,

Chairman

Approved

In approving the above report, Council instructed that the work of drawing up the Bill, together with such By-Laws and Constitution as will be necessary in connection with the formation of the College of Physicians and Surgeons of Canada, be proceeded with with the least possible delay

REPORT OF COMMITTEE ON ROYAL COLLEGE OF SURGEONS OF ENGLAND

Mr Chairman and Members of Council —

This Committee was constituted and its activities begun in June 1925. The object in view was to make it possible for Canadians to obtain the Fellowship of the Royal College of Surgeons by examination without incurring the expenditure of time and money involved in crossing the Atlantic for that purpose.

The Committee has met many times and there have been various conferences between the President and other members of the Council of the Royal College of Surgeons and the Chairman and other members of the Committee. These conferences have taken place in England and in Canada. In addition an extensive correspondence has been carried on between the Royal College of Surgeons and the Committee.

Finally our efforts have been concentrated on the attempt to provide for the conduct in Canada of the primary examination for the Fellowship. A "nomination committee" was appointed by the Royal College of Surgeons, with the following personnel —

Mr Ernest W Hey Groves, *Chairman*

Sir James Berry	Mr W Sampson Handley
Mr Wilfred Trotter	Mr V Warren Low
Sir H J Waring	Mr G Grey Turner
Mr A H Burgess	Mr Hugh Lett, C.B.E.

Sir Berkeley Moynihan, Bt, *President*

Sir Cuthbert S Wallace,	} <i>Vice-Presidents</i>
Mr F J Steward,	

An outline of a scheme prepared by the Committee was considered favourably by the Council of the Royal College of Surgeons and transmitted to your Committee in a communication dated 8th of July, 1927. Your Committee met in Montreal on November 14th, 1927, considered the scheme as drafted by the College, and suggested certain amendments, which were duly transmitted to the College in a communication dated November 21st, 1927. At a meeting of the Council of the Royal College of Surgeons held on the 9th of February, 1928, a revised scheme, embodying the suggestions made by the Committee in Canada, was approved. This revised scheme was considered by your Committee at a meeting held in Toronto on March 19th, 1928, and was approved by them. Finally this revised scheme was approved by the Executive Committee of the Canadian Medical Association held in Toronto on March 20th, 1928.

The outcome of all these negotiations is that the Royal College of Surgeons of England has arranged to conduct the primary examination for the Fellowship in

Toronto "at the end of July or in August 1929," provided a sufficient number of candidates apply.

The following is the revised scheme as approved and authorized by the Royal College of Surgeons of England and by the Executive Committee of the Canadian Medical Association.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

Report of the Nomination Committee dated 2nd of February, 1928, and approved by the Council of the Royal College of Surgeons on the 9th of February, 1928, and by the Executive Committee of the Canadian Medical Association on the 20th of March, 1928.

Revised Scheme for Primary Fellowship Examination to be held in Canada

- 1 The Canadian Medical Association to be appointed the authority in Canada representing the Royal College of Surgeons in connection with the proposed examination, and to be responsible for the arrangements to be made in Canada to enable the Examiners of the College to conduct the examination in that country.
- 2 An examination to be held by the College at Toronto at the end of July or in August 1929, provided that it is notified to the Secretary of the College not later than the 1st of May, 1929, that there are such number of eligible candidates desirous of being examined as may be agreed by the College and the Canadian Medical Association as sufficient to warrant the holding of an examination in Canada.
- 3 Two Examiners in Anatomy and two Examiners in Physiology, who shall be present or past members of the Board of Examiners in Anatomy and Physiology for the Fellowship, to be sent by the College from England.
- 4 A Professor of Anatomy and a Professor of Physiology, or such other persons as may be nominated, to be appointed by the College from names submitted by the Canadian Medical Association to act as Assessors to the Examiners.
- 5 The Examination, written and *viva voce*, of each candidate in each subject to be conducted by two English Examiners and one Canadian Assessor.
- 6 The Canadian Medical Association to be invited to appoint suitable persons to visit and inspect the examination.
- 7 The Questions for the Written Paper in Canada to be set by the Board of Examiners in Anatomy and Physiology for the Fellowship at the same time as those for the Written Paper for the June Examination in England, and to be taken to Canada by the Examiners sent from England.
- 8 The Written Paper Examination to be held on the arrival of the Examiners in Canada, and the *Viva Voce* Examination as soon after as convenient.
- 9 The result of the examination to be determined and announced by the Examiners in Canada on the completion of the examination.
- 10 The dissections to be used at the examination to be prepared in the week preceding the examination in accordance with instructions sent out in advance, on a "subject" not previously used for any other purpose, by a superintendent of dissections appointed by the Council on the nomination of the Canadian Medical Association.
- 11 Notice of the date and place of the Examination to be given in the *Journal of the Canadian Medical Association* and in such other way as may be thought desirable.

- 12 The fee to be payable before admission to examination by each candidate to be \$100.00, or such other sum as may be arranged, and such fees to be collected by the Canadian Medical Association
- 13 The Royal College of Surgeons to advance the sum required for the purchase of First Class return fares to Canada
- 14 The Canadian Medical Association to pay, from the examination fees received, the expenses incurred in connection with the examination, including (1) hotel expenses at a rate not exceeding £3 per day for not more than seven days for each Examiner, (2) travelling expenses of the Examiners (other than ship fares), (3) capitation fee of £3 per candidate examined, i.e., 10s per candidate to each Examiner and Assessor, (4) cost of "subject" and fee to superintendent of dissections, (5) other incidental expenses
- 15 The Canadian Medical Association to submit to the College an account of the fees received and the expenses incurred in connection with the examination, and to transmit to the College the balance, if any, remaining
- 16 A candidate desirous of being examined must deliver to the Secretary of the Royal College of Surgeons, Lincoln's Inn Fields, London, W.C., not later than May 1st, 1920, the following certificates —

- (1) Of Matriculation at a recognized University,
- (2) Of having completed the Examinations in Anatomy and Physiology for Degrees in Medicine and Surgery of a recognized University,
- (3) Of having dissected in a recognized Medical School or Schools during six terms or eighteen months,

Note—Dissections during the regular vacations will be accepted provided the certificate shows that they have been performed under the superintendence of an authorized teacher in a medical school

- (4) Of having attended in a recognized Medical School or Schools,
 - (a) a course of lectures on Anatomy during two terms,
 - (b) a course of lectures on Physiology during two terms,
 - (c) a course of Experimental Physiology,

Note—It is meant that the learners themselves shall, individually, be engaged on the necessary experiments, manipulations, etc., but it is not hereby intended that the learners shall perform vivisections

- (d) a course of Chemical Physiology,
- (e) a course of Histology

ERNEST W. HEY GROVES,
Chairman

February 2, 1928

All of which is respectfully submitted

A. PRIMOSE,
Chairman

Approved

It was announced, supplementary to the above report, that the first professional examination for

the diploma of Fellow of the Royal College of Surgeons will be held in Toronto in July, 1929, and that announcements will appear in the *Journal* from time to time, as detailed information is available

REPORT OF THE COMMITTEE ON PHARMACY

Mr Chairman and Members of Council —

The Committee on Pharmacy has, during this year, made very little progress. No acute questions have been referred to it for consideration. In regard to the preparation of articles on therapeutics and pharmacy for the *Journal*, in accordance with the resolution passed at the last Annual Meeting of the Association, the Chairman has found great difficulty in getting members of the Committee to offer either concrete suggestions in regard to the character of the articles or persons to write the same. He has approached certain individuals but they were unable to give him that active support which would have made the work possible.

The Canadian Committee on Pharmaceutical Standards which is composed of representatives from the Canadian Medical Association's Committee on Pharmacy and the Canadian Pharmaceutical Association, has been making a thorough study of the British Pharmacopoeia and its defects, and has also considered the preparation of a Canadian Formulary. The progress of this Committee has been very satisfactory during the year. They have held one meeting in Montreal and a great many points have been settled by correspondence and by investigation in the laboratories of the various members. The action of this Committee has relieved the Committee on Pharmacy from the discussion of a great many details, and a report from the Committee will be submitted to the members of the Committee on Pharmacy, it is hoped, in the early months of next year.

All of which is respectfully submitted

V. E. HENDERSON,
Chairman

Approved

REPORT OF THE COMMITTEE ON CONSTITUTION AND BY-LAWS

Mr Chairman and Members of Council —

Your Committee desires to report that, acting upon instructions of the Association, the Constitution and By-Laws, with amendments to date, have been printed in booklet form, together with the Code of Ethics, and distributed to all members of the Association. The Committee expresses the hope that members will read this booklet, thereby acquainting themselves with our aims and objects, and also the procedure by which the Association carries on its work.

As no new item of business has been referred to the Committee during the past year, we have nothing further to report. This, in our opinion, indicates a highly satisfactory condition of affairs in an organization as active as the Canadian Medical Association.

All of which is respectfully submitted

T. GLEN HAMILTON,
Chairman

Approved

REPORT OF THE WORKMEN'S COMPENSATION COMMITTEE

Mr Chairman and Members of Council —

The Workmen's Compensation Committee beg to report on the passing by the legislature of the Province of Quebec of a completely revised act, legislation in which the Committee has taken an active interest

While the Province of Quebec was among the pioneers in workmen's compensation legislation (1909) the old act had become unsatisfactory. Settlements were effected by agreement, or by litigation, and no provision was made for hospital or medical expenses other than the cost of first aid treatment. Revision of the act has been under consideration for the past five or six years. The legislation recently passed provides for the appointment of a commission of three to administer the act, thus doing away with litigation and associated costs. The employer is required to take out insurance with a responsible company but provision is made under adequate guarantees for self-insurance.

The clauses which most concern the medical profession, namely those relating to medical care, are considered under the conditions which obtain in the Province of Quebec to be satisfactory, and remedy a long standing grievance. These clauses read in part as follows —

"Accidents which are provided for by this act shall, in addition, entitle the injured person or his representatives, as the case may be —

"To all medical, surgical, pharmaceutical and hospital charges according to a tariff approved by the Lieutenant-Governor in Council, as well as to charges of transporting the injured person to the nearest hospital. Wherever there is more than one hospital, the injured person may select one of his own choice,

"To the supplying, and normal renewing, during a period of twelve months, of prosthetic and orthopedic appliances, the use whereof is deemed necessary,

"The employer must procure for the injured person, whose mother tongue is French or English, the services of a physician, and, if required, of nurses speaking his language. Should he fail to do so, the injured person may provide them himself at the expense of the employer. The physicians, nurses and hospital establishments having had the care of the injured person may recover, from the employer, the head of the enterprise or the insurer, but, if there is no agreement to the contrary, only to the extent of the sums fixed by the tariff, the cost of their services on the decision of the Commission according to the special rules established and homologated by a judge of a court of competent jurisdiction upon a summary petition."

The tariff referred to has not yet been announced but it is hoped that it will be a fair and adequate one.

A schedule is included in the act indicating the percentage of permanent partial disability for specified injuries and this will serve as a guide for other injuries.

The Act is scheduled to come into force on the 1st day of September, 1928.

All of which is respectfully submitted

FREDERICK J TEES,
Chairman

Approved

In the presentation of this report it was brought to the attention of Council that, in the Province of Quebec, there has been formed a Department of Preventive Medicine, to establish health service in industry, and to study possible causes of disease and the means of eliminating them. It was suggested that the Workmen's Compensation Committee be enlarged to include industrial

medicine, but, after consideration, it was decided that the problems involved in industrial hygiene more properly belong to the field of the Committee on Public Health.

REPORT OF THE DEPARTMENT OF HOSPITAL SERVICE

Mr Chairman and Members of Council —

The Department of Hospital Service, the youngest of the many activities of the Canadian Medical Association, has been organized because of the tremendous need for such work among the smaller hospitals in Canada. We have, at present, no national hospital organization to link up the various provincial hospital associations, and, in fact, in some provinces, no provincial hospital associations exist at all. A great many of our smaller institutions, especially those in smaller centres, are building without proper advice, they are purchasing equipment and supplies which may be unnecessary, of poor quality and obtained at a higher price than necessary, they are often inadequately organized and frequently cannot cope with the local situation. The need for the closer study of certain hospital problems was emphasized in the recent report of the Committee on Hospital Efficiency. Thanks to the generosity of the Sun Life Assurance Company the establishment of this Department has now become possible.

In operation but four months, we can already report considerable progress. The organization of the Department and the planning of the scope of our work has entailed considerable thought and effort. An Advisory Board is being formed, composed of representative hospital authorities from all parts of Canada. It has been considered advisable to include laymen as well as physicians on this Board. Hospital problems are being studied by visiting as many of our institutions as possible and discussing the local situation with superintendents, staffs and governors. By the end of the year, we hope to have visited the majority of the hospitals in each province.

Our chief activity will be to act in an advisory capacity on the many problems which arise in the course of hospital administration. This will be by correspondence and, where deemed advisable, by personal visit. We hope, also, to be of considerable assistance to the existing provincial hospital associations and to aid in the formation of such associations where they do not already exist.

To this end we are now building up a reference library on hospital topics. Hospital Administration has become a very highly specialized field in the past few years and we shall find such a library of inestimable value in working out the many details of the requests coming to this Department. We shall pay special attention to those contributors to hospital literature which are most applicable to Canadian institutions. Arrangements have been made with the American Medical Association, American Hospital Association, the Hospital Library and Service Bureau and the American College of Surgeons to work in close co-operation for mutual benefit and to prevent overlapping.

A number of special studies have already engaged our attention. The exodus of recent graduates to other countries and the resultant dearth of internes here has prompted us to undertake to find appointments for our students among our own hospitals. We have found many more vacancies than applicants and hope in subsequent years, by approaching the students at an earlier date, to retain a still higher number in Canada.

We are also making a study of the laws of each province with respect to responsibility for indigents, the extent of government and municipal aid, etc. We hope, also, to bring to the attention of the government many anomalies and impositions in the customs regulations which might well be corrected in the interests of the hospitals.

At present there is no complete nor trustworthy list of Canadian hospitals. We have found the greatest difficulty in completing our own list from the available data which have been culled from many sources. We are, therefore, very pleased to announce that we, in co-operation with the Federal Department of Health, hope to publish shortly, a complete and thoroughly up-to-date list of our Canadian hospitals.

From the very first announcement, a most gratifying response has been evident. A tangible proof that this work will meet a great need is the fact that already, in four months, over one hundred and fifty requests for advice or help have been received. We have reason to hope, also, that our Department can be very instrumental in developing a very close harmony and interchange of viewpoint between the medical staffs and the Boards of Governors.

All of which is respectfully submitted

G HARVEY AGNEW,

Secretary

Approved

In speaking to this report, Dr Agnew suggested that a small committee be named by the Chair to confer in reference to the work of this Department of Hospital Service, and later report to Council. The following committee was named: Doctors G H Agnew, J G FitzGerald, Harvey Smith, G S Cameron, F W Routley, A T Bazin, Duncan Graham, J G MacDougall, and H H Murphy.

At a later session of Council, this Special Committee presented the following resolution as a result of their deliberations —

"Resolved that an Advisory Committee be appointed to the Department of Hospital Service, composed of Doctors A K Haywood, Montreal, L A Lessard, Montreal, F W Routley, Toronto, G F Stephens, Winnipeg, H R Smith, Edmonton, and F C Bell, Vancouver, with power to add lay and medical advisors when, and if, they think it desirable."

This was approved by Council

REPORT OF THE MARINERS' COMMITTEE

Mr Chairman and Members of Council —

In respect to the work coming under the purview of your Mariners' Committee, the Provincial Medical Association in British Columbia took the following action:

WHEREAS the Canada Shipping Act relating to "Sick and Distressed Mariners" provides for the medical and surgical care and treatment of sick and injured Mariners, and,

WHEREAS provision is made for payment of said services out of such monies as Parliament may appropriate for such purposes,

THEREFORE BE IT RESOLVED—

- (a) That the Executive of the British Columbia Medical Association does hereby declare that it is opposed to the principle of the free treatment of mariners in our hospitals by the members of the said hospitals or other medical attendant
- (b) That it is opposed to the principle of Hospital Contract, where such contract includes medical and surgical services,—see Form MHS 40, Department of Health, Marine Hospitals Service

- (c) That remuneration for medical services be arranged directly with the doctor on the basis of the schedule of fees of the D S C R, or some modification thereof agreeable to the Canadian Medical Association Sick Mariners' Committee and the Departments of Health, Ottawa
- (d) That the Department arrange for the services and payment of such specialists as may be required
- (e) That for future appointments the Executive of the Provincial Medical Association nominate a number of physicians for such appointments and that the Department of Health should be respectfully asked to select from these nominees

The Sub Committee in New Brunswick has the following to say regarding the suggestions emanating from the British Columbia Medical Association —

"The Committee wishes to report that we are in complete accord with these proposals up to and excepting those which deal with the nomination and appointment of medical attendants for the treatment of sailors. We feel that in New Brunswick, the choice of medical attendants should be left as at present or given to the selection of the sailor who requires treatment, or his agent.

"We are fully in accord with the principle that Hospital Committees or Boards ought not to be permitted to contract for medical service, and that any medical service rendered an injured or sick sailor should be paid for according to the fees of a definite schedule."

Other sub-committees are giving attention to these matters but have nothing definite to report at this time. All of which is respectfully submitted.

G W PROWD,

Chairman

In the discussion which ensued in reference to this report, it was evident that there was not a very clear understanding on the part of the members of Council as to the policy adopted by the Government with regard to supplying medical care for all those coming under its supervision. It was, therefore, agreed that the General Secretary should obtain definite information from the Government in this connection, and that this information, together with the report, should be referred back to the Committee for further study.

GOVERNMENT REPRESENTATIVE ON COUNCIL

As a result of the discussion on the previous report, the opinion was expressed that it would be a distinct advantage to have a representative of the Government (a medical man) on the Council of the Association, as he would be in possession of information which would be of very material assistance in many of the discussions. It was, therefore, resolved that the Constitution and By-Laws of the Association be amended to make provision for such a representative on Council. As this amendment could not be put into effect prior to the Montreal meeting in 1929, it was agreed that a Government representative should be present at this meeting by special invitation.

REPORT OF THE MEYERS MEMORIAL COMMITTEE

Mr Chairman and Members of Council

In bequeathing the sum of \$100 00 per year, for a period of twenty-five years, to the Canadian Medical Association,—the bequest to be known as the Meyers Memorial,—the late Doctor D Campbell Meyers designates the nature of the memorial in the following, as extracted from his will, and further supplemented in a letter under date February 27th, 1927

"As I desire to perpetuate the study of the prevention of insanity in certain of its types, to which my life has been largely devoted, and as I believe the treatment of this phase of nervous disease belongs to the general physician and the neurologist, I direct my Trustees to pay to the President of the Canadian Medical Association the annual sum of One Hundred Dollars for a period of twenty five years only to provide an honorarium to be known as the Meyers Memorial, to be awarded by a Committee consisting of the President, a physician and a neurologist, (the latter two to be chosen by the President,) to such member or guest of the Canadian or Provincial Medical Associations as shall write and read at the annual meeting of any of the said Associations the best thesis or dissertation on the study and treatment of those functional neuroses which, if untreated, or not treated sufficiently early might probably terminate in insanity, in the hope that the further study of those neuroses will lead to the formation of specially equipped wards in General Hospitals, devoted to their study and early treatment, and more especially in those hospitals where teaching to the medical student as well as the nurse is given, such theses to be submitted to and adjudged by the above Committee. Should no thesis of sufficient merit in the opinion of the Committee be read at the annual meeting of the Association the said grant shall not be made for that year by my Trustees. I desire that my good friend General John T Fotheringham, M D, shall be appointed the first physician and Dr George F Boyer the first neurologist on the said Committee, and that they shall continue thereon as long as they desire to act"

Further notes on the Functional Neuroses as mentioned in my Will

"As the present nomenclature of both functional nervous and mental disease is more or less transitory and may change materially in the next few years, it is impossible to classify definitely the type of disease referred to above. I desire however to refer to those Functional Neuroses in which the psychological symptoms form the essential part of the syndrome, and to that type of Neurosis which develops in late adolescent or in adult life in a patient of previous good mental and nervous history, especially such neurosis as has its etiology in emotional overstrain caused by excessive grief, worry, and allied conditions to which modern life is so conducive, and which, when the present illness is successfully overcome, will enable the patient to at once return to his normal life as a good and useful citizen, and thus avert any of those persistent mental symptoms which so frequently remain as a result of a period of insanity

I desire to exclude from this thesis the study of Mental Defectives, Paranoia and similar conditions of mental disease due to hereditary or organic states, since the treatment of these conditions, however meritorious it may be from a humanitarian point of view, will not, I believe, remove the abnormal mental state of these individuals. Hence the best interests of the State will be obtained by the restoration to their normal health of those individuals who previous to their illness were fully efficient as citizens

Dated this 7th day of February, A D 1927

(Signed) D Campbell Meyers "

Your Committee begs to report progress as follows —

The terms of the bequest have been given wide publicity through the medium of our *Journal*, and also by communications to the Provincial Medical Associations in Canada

The Provincial Secretaries have been requested to bring the terms of the bequest to the attention of the staffs of the mental hospitals in their respective Provinces

It is hoped by your Committee that members of the profession who are interested will co-operate, through the various Medical Associations in Canada, by way of contributions to the programs of their annual meetings

All of which is respectfully submitted

J T FOTHERINGHAM,
Chairman

Approved

CANADIAN SOCIAL HYGIENE COUNCIL

Dr Gordon Bates, General Secretary of the Canadian Social Hygiene Council, was granted a few minutes to place before those present the aims and objects of the Social Hygiene Council. The following is a summary of his remarks —

"In view of the fact that the aims and objects of the Canadian Social Hygiene Council have been changed since the last meeting of the Canadian Medical Association, it struck me as desirable that I should bring in a brief report as to the activities of the Council at this time

"The formal aims and objects, as adopted at the annual meeting held in Toronto on June 12th, 1928, are as follows —

"1 To undertake such measures as may be necessary to promote the public health, the control and elimination of communicable disease, and the development of health education

"2 To undertake such measures as may be necessary to prevent, reduce, or assist in the control of Venereal Diseases

"3 To promote such conditions of living, environment, and personal conduct as may best protect the family as an institution

"4 To co-operate with all government agencies and with the medical, dental, and nursing professions in order to secure these ends

"The alteration of these aims and objects was with the idea of bringing them into line with the actual work carried on by the Council

"During the last year the Council has carried on its work through branches organized in various provinces, and with the co-operation of both the organized medical profession and of the Departments of Health

"A Press Service on health matters reaches approximately 900 papers. This service is organized in such a way that there is no inter-

ference whatever with the educational work carried on through the newspapers by the Canadian Medical Association. The Council also has arranged for radio addresses weekly over twelve different stations, and has continued to use the health exhibit, the lecturer, and the moving picture as in the past.

"We are undertaking general education in connection with venereal disease control, periodic health examination, the county health unit, the prevention of diphtheria, and also in connection with many other matters in which the organized medical profession is interested and in which their co-operation is essential.

"The connecting link created by the appointment of Dr. Primrose to the Board of the Canadian Social Hygiene Council has been of great value, and the assistance of Dr. Primrose on many occasions has been highly appreciated.

"During the coming year, we shall continue to carry on educational work of the type described in the aims and objects as submitted at this time."

It was agreed that, for the ensuing year, Dr. A. Grant Fleming, of Montreal, should represent the Canadian Medical Association on the Board of the Canadian Social Hygiene Council.

SECTION OF FRENCH-SPEAKING MEMBERS

It was recommended to Council that consideration be given to the establishment of a section of French-speaking members at the annual meetings of the Association. It was agreed that, in so far as the Montreal meeting is concerned, this matter should be passed to Dr. Bazin for study and report.

MATERNAL MORTALITY

It was pointed out that the National Council of Women of Canada has appointed a Commission to investigate the whole matter of the seemingly high rate of maternal mortality in Canada. Miss H. P. Plumpton, of Toronto, President of the Canadian Red Cross Society, being the Chairman of the Commission. It was suggested that it would be advisable for the Canadian Medical Association to indicate to Miss Plumpton that it would be glad to send a representative to sit in to this Commission. It was agreed that Dr. W. B. Hendry and the Chairman of the Committee on Public Health should be asked to sit in to the Commission, representing the medical profession of Canada.

CHAIRMEN OF COMMITTEES

The following nominations were approved for Chairmen of Committees —

<i>Ethics</i> - - - - -	Dr. L. J. Austin, Kingston,
<i>Intra-Canadian Relations</i> -	Dr. J. S. Wright, Edmonton,
<i>Legislation</i> - - - - -	Dr. G. S. Fahmy, Winnipeg,
<i>Municipal Physicians</i> - -	Dr. D. S. Johnstone, Regina,
<i>Economics</i> - - - - -	Dr. J. H. MacDermott, Vancouver,
<i>Medical Education</i> - - -	Dr. E. S. Ryerson, Toronto,
<i>Post-Graduate</i> - - - -	Dr. Geo. S. Young, Toronto,
<i>Lister Memorial</i> - - - -	Dr. John Stewart, Halifax,
<i>Oster Memorial</i> - - - -	Dr. J. H. Mullin, Hamilton,
<i>Medical Services in Canada</i>	Dr. H. H. Murphy, Kamloops,
<i>Medical Survey of Canada</i>	Dr. J. W. Crane, London,
<i>Indian Affairs</i> - - - -	Dr. H. W. Wadge, Winnipeg,
<i>Royal College of Surgeons</i> -	Dr. A. Primrose, Toronto,
<i>Pharmacy</i> - - - - -	Dr. V. E. Henderson, Toronto,
<i>Constitution and By-Laws</i> -	Dr. T. Glen Hamilton, Winnipeg,
<i>Study Committee on Nursing of the Canadian Medical Association and Canadian Nurses' Association</i> - - - -	Dr. G. Stewart Cameron, Peterborough,
<i>Workmen's Compensation-Advisory Committee to the Department of Hospital Service</i> - - - -	Dr. F. J. Tees, Montreal,
<i>College of Physicians and Surgeons of Canada</i> -	Dr. A. K. Haywood, Montreal,
<i>Mariners Committee</i> - - -	Dr. F. N. G. Starr, Toronto,
<i>Meyers Memorial</i> - - -	Dr. C. W. Prowd, Vancouver,
<i>Central Program</i> - - -	Dr. I. T. Fotheringham, Toronto,
<i>Personal Archives</i> - - -	Dr. Geo. S. Young, Toronto,
	Dr. C. F. Wilde, Montreal,

The Public Health Committee and the Committee on Publicity and Health Education were united under the chairmanship of Dr. J. G. FitzGerald, Toronto.

SECTION OF UROLOGY

The General Secretary reported the receipt of a wire from the Canadian Urologists who were convening in Montreal, stating that they had decided to form a Section of Urology in the Canadian Medical Association. It was agreed that the Canadian Urologists should be given power to elect their own Chairman and Secretary for next year.

MEDICAL INSPECTION OF IMMIGRANTS

The following resolution was submitted for the endorsement of the Association —

"That the Canadian Medical Association approves the principle of medical examination of prospective immigrants (prior to embarkation) by Canadian physicians, as far as practicable. Further, that the action of the Department of Health, Canada, in endeavouring to introduce a method calculated ultimately to make this principle effective, is commended."

It was agreed that the Association approve the principle of this resolution and that the Department of Health be so advised

PRINCE OF WALES

CANADIAN MEDICAL ASSOCIATION PATRON

The following cablegram was sent to the Prince of Wales, Patron of the Association, on the occasion of his birthday —

"Canadian Medical Association in annual session assembled desires to extend sincere birthday greetings to your Royal Highness"

SUN LIFE ASSURANCE COMPANY OF CANADA

The Secretary was instructed to wire Mr Macaulay, President of the Sun Life Assurance Company, expressing the hearty appreciation of the Association of the valuable co-operation received in connection with our post-graduate work and the work of the Department of Hospital Service

ELECTION OF OFFICERS

The following officers were duly elected for the ensuing year —

<i>President</i> - - - - -	Dr S R Jenkins, Charlotte-town,
<i>President-Elect</i> - - - -	Dr A T Bazin, Montreal,
<i>Honorary Treasurer</i> - - -	Dr W G Reilly, Montreal,
<i>Editor</i> - - - - -	Dr A D Blackader, Montreal,
<i>Managing Editor</i> - - -	Dr A T Bazin, Montreal,
<i>Chairman of Council</i> - - -	Dr A Primrose, Toronto,
<i>General Secretary</i> - - -	Dr T C Routley, Toronto,
<i>Secretary, Department of Hospital Service</i> - - -	Dr G Harvey Agnew, Toronto

Executive Committee

Dr H H Murphy, Kamloops,
 Dr G Stewart Cameron, Peterborough,
 Dr T Glen Hamilton, Winnipeg,
 Dr J G FitzGerald, Toronto,
 Dr A MacG Young, Saskatoon,
 Dr J S McEachern, Calgary,
 Dr Léon Gérin-Lajoie, Montreal,
 Dr J G MacDougall, Halifax,
 Dr Geo S Young, Toronto,
 Dr F N G Starr, Toronto

ANNUAL MEETING, 1929

It was agreed that the annual meeting in 1929 should be held in Montreal on June 17, 18, 19, 20 and 21

LIFE MEMBERS

It was unanimously agreed that the following members of the Association should be elected to Life Membership —

Mr I H Cameron, Toronto,
 Dr F J Shepherd, Montreal

AUDITORS

It was agreed that Messrs McDonald & Curry, of Montreal, and J H Dignam, of Toronto, should be appointed auditors of the Association's accounts for the ensuing year

HISTORICAL MEDICINE

There has been a strong feeling among members of the Association for some time past that definite steps should be taken by the Association to gather information on the history of medicine before much of the data is lost beyond recall, also that an effort should be made towards the formation of a permanent medical museum in connection with the Canadian Medical Association. With this end in view, a group of Canadian Medical Association members held a conference in Charlottetown, the result being the formation of a committee to be known as the Committee on Historical Medicine, with Dr J W Crane, of London, as Chairman and Dr J H Elliott, of Toronto, as Secretary. It was the expressed hope of the conference that a permanent Section of Historical Medicine would be formed in the Association at the earliest possible date. Any data or articles of historical interest which our members can pass along to this newly formed committee will be very highly appreciated.

CONCLUSION

Attention was given to a great many other details in connection with the work of the Association, which were passed to the various committees for consideration and report.

All of which, on behalf of the Council and Executive Committee of the Canadian Medical Association, is respectfully submitted

T C ROUTLEY,

General Secretary

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An Address

ON

THE DECLINE OF INFECTIOUS DISEASE IN ITS RELATION TO MODERN MEDICINE*

By THEOBALD SMITH, M.D.,

*Director, Department of Animal Pathology, Rockefeller Institute,
Princeton*

INFECTIOUS disease does not play the dominant part on the medical stage that it did a generation ago. Since then much knowledge regarding disease in the individual, rather than that of the mass, has been acquired. Nevertheless, the fact remains that, although the microbic aspect of disease has lost some of its stimulating influence on research, the organisms are still with us and cast their myriad shadows over every department and specialty of medical practice.

THE ETIOLOGY OF INFECTIOUS DISEASE

Standing as we do at the end of half a century of work in scientific microbiology, we may well pause to consider the extensive spread and the depth of accurate information which stands to the credit of many workers since Pasteur, Lister, and Koch began their pioneer work. In 1876, Koch demonstrated the cycle of the anthrax bacillus from spore to spore in a drop of aqueous humour under a cover glass. In 1882, he announced the discovery and culture of the tubercle bacillus. In 1880, Pasteur began his work on chicken-cholera and anthrax vaccination. These discoveries represented the extent of our knowledge at that time regarding the

cause of infectious disease. Since then great progress has been made in our knowledge of infectious disease. I need only mention the isolation and culture of many pathogenic micro-organisms, the study of the power of resistance to disease acquired by the body and of the antibodies associated with it, the rise of chemotherapy, and the development of our knowledge of the protozoa, and the world of ultra-microscopic infectious agents. Giving birth to these concrete achievements were the concepts, theories, and hypotheses which, in part true, and in part false, animated the workers. It may be well on this occasion to recall some of these guiding theories which have survived and form the foundation on which my subject rests.

IMMUNITY

In the early days of the new era, infectious diseases were looked upon as straight contests between host and infectious agent. The micro-organisms entered, multiplied, and were checked and killed, or else the host succumbed. Now we know that in many cases a kind of equilibrium establishes itself, in which the micro-organism remains somewhere in the host, ready to multiply again when the host is off guard. In others, localizations occur in which the specific bacteria multiply and survive for a time. The victims of these conditions are now called "carriers." The concept of "the carrier" was

* The presidential address, somewhat abridged, delivered before the Congress of American Physicians and Surgeons, Washington, D.C., May 1, 1928. The complete paper appears in the September number of the *Journal of Preventive Medicine*.

developed chiefly with protozoan diseases. In the bacterial diseases it first took root when an intensive study of diphtheria developed as a result of the discoveries of toxin and antitoxin. So-called "focal" infections are types of this condition, and represent local forms of disease towards which the host is partially immunized. Bacteria, notably spores of anaerobes, may maintain themselves for a time in the system without multiplying. They may enter through fresh wounds of the skin or mucous membrane, and the liver, draining the digestive tract, often contains organisms of intestinal origin. Such bacteria may serve to explain certain rare complications following surgical operations and urinary infections in the absence of other manifest causes. The concept of "the carrier" is thus a complex one, and involves as many possibilities as there are species of micro-organisms capable of surviving in the tissues.

No one subject in the domain of pathology appears to be of so much importance as the problems connected with the defence developed and maintained by the body against foreign living matter. The importance of this has been recognized from the very beginning of the bacteriological era. The remarkable success of Jenner's cowpox, long before any organized investigation of infectious disease had been started, stimulated Pasteur to undertake his studies in fowl-cholera and anthrax. Since that time there has been no end to the procession of methods for the protective inoculation against disease. Here, as in other fields, empiricism was in advance of organized scientific enquiry, and harvested some notable triumphs of permanent value.

It was in 1884 that Metchnikoff published his first paper on phagocytosis, as observed in a disease of a small crustacean (*daphnia*) occurring in an aquarium. He was able to watch the spores of the microbe, as they penetrated into the body, become surrounded and engulfed by these wandering cells. This new theory of cellular defence proved highly intriguing, and stimulated further investigation. The discovery of antitoxin as a purely humoral agent of defence in 1890 added to the interest, and gave rise to a controversy regarding the relative significance of these two theories. Since then we have learned that the processes started by invading organisms in the body form a series of

highly complicated biological reactions, no one of which can be directly credited with being protective or offensive, since in every disease the cellular and humoral response must be specially analyzed and evaluated.

Phagocytic cells may take up bacteria in large numbers yet the process may prove fatal. Protozoa make a specialty of living within cells, both epithelial and wandering, during a portion of their cycle within the host. The phylogenetic significance of these groups of mobile and mobilizable cell-types was referred by Metchnikoff to ancestral processes of nutrition in very low forms. In the case of not a few of these invasive organisms the defending cells actually become a support and comfort to the enemy. At present, we are forced to acknowledge that, while we know a large number of interesting cellular and humoral actions and reactions, we have not yet learned to piece them together satisfactorily for any one disease.

Aided by studies in genetics we are beginning to understand that we cannot add to or subtract from the original dower of capacities we received from our ancestors. Medicine may assist greatly by determining the maximum capacity of these innate powers and furthering them by adequate stimuli. It cannot add to the capacity to produce protective bodies through vaccination, but it is in a position to stimulate and mobilize, by proper methods, primary latent protective energies. Fortunately, individuals of the same species do not differ among themselves to such a degree as to jeopardize current methods of mass vaccination, but it must always be borne in mind that towards any infectious disease a few individuals may be inadequately provided with protective capacity, even under maximum stimulation by vaccination procedures. It is still a question whether the immunity or susceptibility of individuals is correlated with any anatomical or physiological character. The impression acquired from experimentation is that relative susceptibility is a character by itself, and not predictable from any other bodily function.

It has been customary to speak of natural as distinguished from acquired immunity. Certain species are definitely immune to diseases to which other species succumb. This type of immunity is probably dependent on quite different factors from those possessed by resistant in-

dividuals of a susceptible race. In the latter the immunity appears to depend on the capacity of the individual to reproduce and mobilize certain protective antibodies quantitatively. In the naturally immune these are not needed. The term "acquired immunity" would appear to be misleading. Man and all susceptible animals have a certain fundamental resistance, even when the race has not been in contact with the specific micro-organism. What is really meant by the term is that the individual has simply strengthened or augmented his original resistance in the presence of specific infection.

As a corollary of the various established laws in immunology it has been generally accepted that the animal organism is a unity in its efforts to protect any tissue or organ. The effect of Jenner's local vaccine pustule must have forced this principle to the front long ago. With the development of our knowledge of immunology the fact has been accentuated over and over that any local multiplication of infectious agents spreads its influence through the entire system. A single small tubercle allergizes the whole body. Antibodies are poured into the blood so quickly that the higher local immunity produced by the inoculation can be distinguished only with great difficulty.

VARIATIONS IN THE TYPE OF ORGANISM

Second in importance to the concept of immunity is that of the variability of micro-organisms. Shortly after their discovery wild theories arose about the changes which micro-organisms may undergo. To counteract these heterodox assumptions Koch and his followers became rather too rigid adherents of the theory of the stability of pathogenic materia, and time was required before the newer idea of variability got a foothold. Slowly facts accumulated proving that no pathogenic micro-organism was without variants. The source and origin of many varieties of the same species remained obscure. It was noted however that bacteria gradually lose their virulence, or mutate into almost non-virulent types, under conditions of artificial culture. Variations among pathogenic micro-organisms are probably induced in the human and animal body by meeting in the tissues a variety of opposing conditions to which they must adapt themselves.

It would appear that the infectious diseases of

the human race probably originated in its animal ancestors, and passed on to primitive man and developed in an environment equivalent to that of human life. In the early history of man and his ancestors different infectious agents probably arose in different parts of the globe, and remained more or less confined on account of the limited capacity of man at that age for traveling long distances. Even migration and wars were slow in their progress, and diseased individuals were left behind or succumbed by the way. The discovery and use of any means of rapid transportation might have been highly destructive to the early races of mankind. It is to be remembered also that in those early days man lived in close contact with his domesticated animals. Even to-day, in the East, domestic animals are housed under living quarters.

In view of these facts, the question arises "What are the possibilities for the appearance of new or modified types of infectious disease, when micro-organisms transferred to other species change their physiological characters, and, owing to this change, become infectious for man?" Changes in the host are probably responsible for the many micro-organisms closely related to one another but not absolutely identical. Thus the three races of tubercle bacilli have probably been derived from one ancestral type. An illustration of my theme is the recent and more or less sudden sporadic appearance of undulant or Malta fever at a distance from its supposed primary centre about the Mediterranean. Instances of this infection have been reported within recent years from various places in the United States, Denmark, Germany, and Rhodesia, while the number of cases in Italy and other endemic regions appears to have increased. How are we to account for this occurrence? The organism of Malta fever in goats has been recognized since 1889, and the closely related form producing abortion in cattle since 1897. Another race has been noticed in swine since 1914. It is my belief that this porcine variety has been developed from cattle in recent times in the middle west, as a result of the close association of the animals in their feeding grounds, and the adaptation of the bovine variety to the pig under certain unknown conditions. If the bovine variety is regarded as responsible for undulant fever in man, why is it that these cases in man have appeared only

within the past three or four years, whereas according to evidence developed in my laboratory this micro-organism was active in dairy herds as far back as 1893. It is probable that everyone who has drunk raw milk has ingested this micro-organism once or many times. It would therefore appear probable that the bovine organism is only feebly capable of multiplying in the human system, but the passage of this micro-organism through the pig has made it more virulent for man, and that some of this modified porcine type has got back into the udder of cows, and thus established small centres of human disease. If nothing had been known of the animal diseases furnishing this human infection we might have been led astray in our speculation and regarded it as non-infectious, and might have failed to turn to animals as the probable reservoirs of the organism.

Taking these facts into consideration we may visualize the possibilities for new diseases to appear. The cause of the decline of the epidemic form of infectious disease has frequently been referred to the gradual rise of specific resistance in the host as a result of mild infections. It has also been claimed that there are certain more highly resistant individuals who, being spared, transmit this resistance to their offspring and so build up an immune population. Populations exposed to a strange disease suffer in epidemic form. The population furnishing the infection may not even be outwardly diseased. In general, in the great epidemics which have spread rapidly over large areas of the earth's surface their causal organisms have a special history and have come from an environment different from that into which they are lodged when they produce their wide-spread effects. In some cases, too, virulent races of micro-organisms would appear to have become extinct because the host perished before the period of excretion began. Other microbial races may have then taken their place. As a result of an interaction between the cells and fluids of the host and the micro-organism virulence has become reduced, so that finally we get a slight rise of specific resistance in the general population, and also an adaptation of the microbial cause to living conditions in the new host, which means a virulence lowered to a certain equilibrium level. After this has been reached the disease may become endemic, with

small epidemic outbursts from time to time. A gradual reduction in mortality occurs, in which economic and medical influences play a part. In this way, in my opinion, a modification of the epidemic virus takes place, and we meet with a more tractable, less destructive organism, which probably never returns to its original level of virulence. Viewed from this angle, the flora of the mucous membranes may be either the degenerated survivors of recent or ancient epidemic types, or else saprophytes adapting themselves to a parasitic state. Even the ubiquitous *B. coli* may have a history.

In discussing the factors that have led to a general decline in the mortality due to infectious disease three agencies are cited as claiming more or less of a victory: the changes in economic conditions, the application of medical science, and the interplay of natural forces, still largely unknown and not controlled by human foresight, which tend to raise the resistance of the host and reduce the virulence of the parasite.

Improvements in economic conditions provide the opportunity for a wider aseptic zone through personal cleanliness. Unfortunately, industrial changes lead to huge concentrations of the population, in which the individual zone is broken in upon. One result is a continuation and probable increase in respiratory affections. A decrease of intestinal infections has been accomplished through adequate water supply and the inspection of food. The sewage problem has been advanced but is still unsolved. So far we have only converted our water courses into open sewers, permitting occasional outbreaks of intestinal disease as a result.

In every detail of individual and communal life medical science has formulated protective devices to maintain health. Without the constant application of these medical and preventive safeguards the human race could not sustain itself. If it dropped to the level of animals in this respect its fate would be a reduction to animal density of population, or even worse, unless the race segregated itself into non-communicating groups. The number of diseases scattered over the globe is so great that free intercommunication on the animal level might bring so many to bear on the race as to make it impossible to continue its struggle against other natural injurious agencies.

An important function, which should not be

overlooked, is the isolation of the sick, to such an extent as to exterminate in many instances the infectious agent in the patient. How much is gained by this procedure it is difficult to state. Where the micro-organism represents a resistant type, as in tuberculosis, and where chronic carriers are the rule, the advantages of isolation and the destruction of the secretions carrying the virus consist in a reduction of the general level of infection and account for a large number of allergic individuals free from demonstrable lesions. This spontaneous vaccination in countries where such diseases prevail is probably a safeguard rather than a danger.

The value of medical science in all its forms is now so thoroughly established as part of our civilization that its loss would be disastrous, and would probably endanger the life of the social organization as at present constituted. Medical science and practice must go on and continue their evolution, parallel with that of human society, for we are perpetually mortgaged to maintain the barriers against our environmental enemies, until a world organization shall have recognized backward races as potential dangers, and as a consequence have brought the world population to a common hygienic and anti-parasitic level. The research laboratory must play a large part in the natural history study of disease, but it must subordinate its analytical tendencies to the broader view of the whole, and assist in the comparative study. Those of us who have followed the development of research over a considerable period of years have frequently been faced by the fact that what may be regarded as the luxury of one period becomes a necessity of the next. Coming generations will see established research stations in hitherto only partially explored territories, where living conditions will be created to make research not only possible but remunerative to medical science, and where all forms of disease will be objects of interest in view of their possible interrelations and the light that they may shed on our many still unsolved problems.

who called attention in fitting language to the many activities of Dr. Smith in the field of science. Dr. Forbes said —

Ladies and Gentlemen

"By a curious turn of the wheels of fate, one of the greatest medical scientists whom America has produced is to be presented to an American audience by a subject of Great Britain. This but shows the catholicity—the universality—of the Medical Sciences. The speaker of the evening, Dr. Theobald Smith, the President of the Congress of American Physicians and Surgeons, is Director of the Department of Animal Pathology of the Rockefeller Institute for Medical Research, at Princeton. In 1886 Dr. Smith made the first experiments in immunity. These were followed by the work of Behring, Roux and others. Dr. Smith's study of Texas fever in 1889-1893 was not only a great advance in the science of protozoan disease, but it paved the way for the work on malaria by Patrick Manson, Ronald Ross, and Giassi. In 1893, he first published his studies on the bacillus of tuberculosis. In 1898 he made the first clear differentiation between the bovine and human types. He has taken an important and an active place amongst the students of tuberculosis ever since. In 1895, Dr. Theobald Smith began his contributions on the production of toxins and antitoxins in diphtheria and tetanus. Whilst engaged in this research he made those fundamental observations on anaphylaxis which were then called "The Theobald Smith Reaction." For forty-five years his activities in research in the field of science have been constant and productive of much good. His contributions to the literature of the medical sciences have been many and of the greatest importance. It is not the good fortune of many men to do one really great thing, but to how few men it is given to be the discoverer not only of many truths, but to have so inspired others that, through their labours, pain, suffering, and death have been minimized, and the world has been made a safer and a better place to live in. Ladies and gentlemen, may I present Dr. Theobald Smith."

On the important occasion of the delivery of this address, Dr. Theobald Smith was introduced by Dr. A. Mackenzie Forbes, of Montreal,

THE USE OF SULPHOCYANATE OF SODA IN HIGH BLOOD PRESSURE*

BY ARTHUR G. SMITH AND R. D. RUDOLF

Toronto

HISTORY

THE question of high blood pressure has loomed very large in recent years in the mind of the profession and of the public, and often in the case of the latter an apprehension is aroused which frequently is quite unnecessary and may do much harm. The mere fact of a pressure being apparently too high does not mean that we should at once endeavour to lower it. It may be there for some good purpose, it may be compensatory and the *optimum* pressure for the individual. If we do succeed in reducing it in such a case the patient must be the loser. But there are certain cases where the rise, if associated with distressing symptoms, such as headache, dizziness, and even more serious ones, like passing aphasia or paresis, is serious, and here it is good treatment to try to lower it.

In every case of hyperpiesis it is well to regulate the environment, by enjoining mental and physical rest and relieving as far as possible all nervous strain, also to attend to the diet, reducing all substances which tend to raise the pressure. Beyond these measures it is only in those cases showing distressing symptoms that we should go further.

All cases of raised blood pressure fall naturally into three groups, and it is often possible, by a careful consideration of the history and by physical examination, to determine into which group a patient entirely or chiefly comes. These groups are, (1) Nervous, (2) Toxic, (3) Organic.

In a case where, in spite of careful regulation of environment and diet, the pressure remains elevated and there are symptoms, an endeavour should be made to lower the pressure. In emergencies, such as angina pectoris, one of the nitrites is usually used, often with immediate good effect, but in the more chronic cases certain drugs having a more prolonged action are often indicated, and it is with one of these, rather less known than most, that we will now deal. This is the sulphocyanate of sodium, potassium or ammonium, and it is with the first of these that we have chiefly worked.

The first work of interest in the use of the sulphocyanates was done by Claude Bernard¹ more than seventy years ago. He described experiments showing their toxic effects. He found the drug to be a direct muscle poison when given intravenously in large doses. It abolished muscular activity without producing any sensory changes. Six years later, Olliver and Bergeron² showed that the sulphocyanates had a toxic action when taken by the mouth as well as when given intravenously, but in the former instance much larger doses were required to produce similar effects. Dubreuil and Legros³ repeated Bernard's work, and attempted to use the sulphocyanates as an antidote in strychnine poisoning, but with little success. Kollocke⁴ showed that the cyanate was the active part of the salt in its effect upon muscle. Paul⁴, in 1903, found that the sulphocyanate ion had a maximum inhibiting effect on the precipitation of protein in series with iodine and bromine ions. This led him to try its effect as a sedative in comparison with the bromides. He gave daily doses of one gram (gr 15) to neurasthenic, cardiac and tabetic patients. It was during this work that he discovered not only a sedative action but, what was more important, that some of the patients suffering from hyperpiesis were relieved of symptoms and showed marked reduction in blood pressure. Further contributions in regard to the toxicology and pharmacology were made by Lodholtz⁶, and Edinger and Treupel⁷. Nichols⁸, in 1926, reported a dozen cases of hypertension in which the blood pressure was well reduced under daily one-gram doses. He had used this treatment for fifteen years with constantly good results. The most recent report on sulphocyanate therapy comes from the Cornell Clinic. Under the direction of Dr. Gager⁹, 35 cases were treated for high blood pressure with the potassium salt. He reports beneficial results, though he used much smaller doses than others had done, and, as will be seen later, our experience coincides with his.

*Read before the Canadian Medical Association Meeting, Charlottetown, P. E. I., June, 1928.

CHEMISTRY

The sulphocyanates as a group include the ammonium, potassium and sodium salts. The sulphocyanate of soda, which was the substance that we used chiefly, is an alkaline, white, crystalline body, very soluble in water and alcohol. It occurs normally in body fluids and secretions, such as the tears, saliva, gastric juice and urine. It is produced by breaking down of proteins containing sulphur. It is believed to be formed in the salivary glands, excreted, swallowed and then absorbed into the system. The ordinary sulphocyanate content of the saliva is about 0.01 per cent, but this varies under different conditions, for example, it is decreased by the administration of iodine and increased by tobacco⁸.

Sulphocyanates can be detected in the saliva, tears, or urine in dilutions of 1-10,000 by the addition of a drop or two of ferric chloride solution. The resultant colour is a dark red which decolourizes on the further addition of an excess of mercuric chloride. These colour reactions do not take place if the mixture is decidedly alkaline.

PHARMACOLOGY AND TOXICOLOGY

Taken by mouth in a simple aqueous solution, daily doses of fifteen grains of sodium sulphocyanate are usually tolerated over a period of at least three weeks without any untoward result. Excretion takes place through the salivary glands, kidneys, and slightly in the stools. The saliva and urine show a marked increase in their sulphocyanate content while the drug is being taken, and this persists for several days after its discontinuance. That the drug is only slowly got rid of is also shown by the persistence of its therapeutic effects after it has been stopped.

As a result of the chemical action of the drug on the tissues, none of the sulphocyanate radicle is changed into the very toxic hydrocyanic acid. Both *in vitro* and *in vivo* the reverse change is readily effected, that is from hydrocyanic to sulphocyanic acid⁸.

The minimum lethal dose in various animals is about 500 mg per kilo of body weight. In a man of 154 lbs this would be about 30 grams, or one ounce, and in the several fatal cases on record (all of them suicidal) the amount was always much greater than this.

Lodholtz⁶ reports work of Monk, in which he showed the liver to be the storehouse of the sulphocyanates which had been given intravenously to animals. Some were also found in the spleen and the salivary glands. In the same

paper Fenwick is stated to have found that the sulphocyanates varied according to the patient's state of health. They were greatly reduced in cases of malnutrition, old age, and the wasting diseases.

The mode of action of the sulphocyanates in reducing blood pressure is as yet quite obscure, and much of the pharmacological work in this direction has been contradictory. Claude Bernard's description of the drug as a muscle poison, when given in massive doses, suggests that in therapeutic amounts it may act as a vaso-dilator. Recent work by Major respecting the increase of guanidine bases in high blood pressure is interesting when we recall that Monk showed the liver to be the storehouse of the sulphocyanates. Does the sulphocyanate bring about a fall in pressure owing to its decreasing the guanidine bases? Sulphocyanates were shown by Edinger and Trepel to increase the urinary output of sulphur and nitrogen. Pauli suggested that they acted by reducing the calcareous deposits throughout the body. He was able to demonstrate this in patients who had calcareous deposits about the teeth. The sulphocyanates may affect the blood pressure in more than one way, and further work is required before we can know the exact mode of action of the drug in this respect.

EFFECT ON NORMAL BLOOD PRESSURE

In our investigations into the action of the sulphocyanates we first studied their effects on individuals with normal blood pressures. Six persons with normal pressures were given sodium sulphocyanate in five-grain doses in water thrice daily after meals. They reacted by a fall in systolic pressure of from 15 to 30 mm in the period of one week. When the pressure fell below 100 mm the medication was stopped. They did not complain of any symptoms and were not aware of any change in their physical condition. The first patient recovered his former pressure of 130 mm in one week. The second (Case 1) continued at a lower level for nine weeks and did not regain his former pressure of 135 mm for three months.

CASE 1

A male patient, suffering from a spinal condition, confined to bed, but in good general health, was given 15 grains of sodium sulphocyanate per day for a week. His pressure had been fairly constant at 135-90 for the past two years. On the fourth day after starting the drug the pressure began to fall. On the sixth day it was 98-70 and the medication was stopped. The pressure showed a persistently lower reading (about 100 mm systolic) for two months, and it was not until the end of the third

month that it regained its former level. He complained of no symptoms and was not aware of any change in his physical condition.

A third patient continued at a much lower level for several weeks and did not regain his normal pressure of 135 mm for eight weeks. The other three all showed a considerable fall.

EFFECT ON HEIGHTENED PRESSURE

In selecting patients for treatment we did not pick any particular class, but, rather, included the general assortment of high pressure cases that ordinarily present themselves for help at a general hospital clinic. Those complicated by any acute inflammatory condition, cardiac failure, or severe kidney disease, were excluded, and only those in whom the main feature was hyperpiesis were used. In all, some seventy cases have been studied. These were divided into three groups according to the dosage employed.

Group I—In this group there were twelve cases, ten of them being bed patients. Before the medication was commenced they were kept for two full weeks in bed, to allow for any fall in blood pressure due to rest. Their pressures were taken frequently. They were then given five grains of sulphocyanate of soda thrice daily in water after food, and the blood pressures were recorded daily. Two were out-patients and their pressure readings were recorded three times a week. Eleven of the twelve showed some lowering in pressure, the length of time necessary to bring about a fall varying from thirty-six hours to one week. One patient, a case with cardio-renal damage, showed no change in pressure. The fall in the systolic pressure varied from 20 mm to 80 mm in one week. In two cases, with falls of 60 and 80 mm, there was some weakness and sense of fatigue, and in one instance there was nausea. These disagreeable symptoms lasted about six days, even after the medication was stopped. In several patients the blood pressure continued to fall for several days after administration had ceased. The most decided fall was in the systolic pressure, but in the majority of instances the diastolic was also lowered to some extent. The longest period which the pressure took to return to its former level after the drug was stopped was six weeks. Under a much reduced dosage it could be kept down.

Invariably with the reduction in pressure there was noted a diminution in tension, headache, and a disappearance of hot flushes and a lessening of nervousness. In several instances it was found

that the drug produced a sedative effect, in that the patients said that they felt drowsy. Several of them, who had previously suffered from insomnia, were now able to sleep throughout the entire night. Case 2 is a typical example of this first group, *ie*, those taking the full dose.

CASE 2

Female, aged 65, who had had hypertension for at least three years, and suffered from headache, hot flushes and weak spells. During the last year the pressure had been 260-140 or thereabouts. On February 4th, 1928, she was given sodium sulphocyanate in five grain doses thrice daily. By February 11th the pressure had fallen to 200-100 and the drug was stopped. She complained of feeling tired. On February 18th the pressure was 184-110. She was feeling much better and completely free from her persistent headache. She continued at this lower level for several weeks and when it climbed to 220 mm was put on a reduced dose of five grains of the sulphocyanate once daily, which again controlled the pressure and kept it below 200 mm.

Group II—From the observations made on the first group we decided that one gram, or fifteen grains, a day was not necessary in the majority of cases. It was also felt that the reduction of dosage might eliminate any occurrence of untoward symptoms, such as those before mentioned.

This second group included twenty patients who were attending the out-patient clinic. Their systolic pressures varied from 160 mm to 300 mm. Our aim was to bring about a moderate reduction in blood pressure, and then allow for a period of rest before again attempting to again reduce it. With this object in view we gave five grains of the drug twice daily, until the pressure showed a drop of 20 to 30 mm, then gave them three to seven days' rest before resuming the treatment. In spite of the lessened dose four of the twenty patients felt some lassitude, but only to a slight degree, and this might be accounted for as being directly due to the fall in blood pressure. It was found that the pressure could be reduced to the desired level, as with a larger dose, but the reduction was more gradual. Two of the group showed a substantial fall in the systolic pressure which was not permanent, lasting only three to five days, even when the drug was continued for some time. Ten of the twenty showed very decided improvement. They were relieved of symptoms, such as headache, dizziness, etc., and the pressures fell as much as 100 mm. They were able to carry on without sulphocyanate for periods of time varying from two weeks to two months. Case 3 is an example of this group.

CASE 3

Female, aged 46, who had suffered from headache, hot flushes and nervousness for two years. Heart normal,

no albumen in the urine, but some degree of arterio-sclerosis. The blood pressure varied between 260 and 270 mm systolic. On March 1st she was put on ten grains of sodium sulphocyanate a day. March 3rd, blood pressure 220-120, drug stopped. March 8th, blood pressure 204-120 and medication started again. March 17th, blood pressure 190-120. Drug reduced to five grains daily. A gradual fall in pressure occurred, and on March 27th this was 170-110, the patient felt better and was almost entirely relieved of her symptoms. It was found that a dose of five grains three times weekly kept her comfortable and controlled her symptoms.

While taking blood pressures a close watch was always kept on the pulse rate. Certain patients showed variations in this during treatment, but there was no evidence that this was due to the drug. The majority showed no change in the heart rate.

Group III—In this group the dose used was only five grains daily. Some forty patients were so treated, some of them being private cases, but the majority were attending the out-patient clinic. No cases complicated with nephritis were used. Four had moderately severe arterio-sclerosis, and two of these had had slight strokes some months before coming under our care. Two were diabetics, and the remainder were toxic or nervous cases of unknown origin. They were all given five grains of sodium sulphocyanate once daily in water after the evening meal. A few were tried on divided doses of $2\frac{1}{2}$ grains twice daily, with the same result. With this dose it usually required from eight days to two weeks before the systolic pressure fell to any extent. The results varied considerably but the pressure was lowered in every case in the group. In the arterio-sclerotic patients the main fall was in the systolic pressure, the diastolic remaining almost unchanged. In such patients we were unable to reduce the pressure more than thirty points, but there was a noticeable softening in the force of the beat as it came through. Two of the four in this sub-group were relieved of headaches, the others experienced no relief. The most gratifying results were obtained in the remainder of the group. The gradual fall in pressure was accompanied by relief of symptoms, such as headache, dizziness, nausea, and tension. The pressure in one case fell from 260 to 160 and in another from 240 to 150. Others showed a fall of from 200 to 140, and from 180 to 130. No disagreeable symptoms were induced. After such falls the dose was reduced to five grains every second day and in this way the excessive pressures could usually be kept in control. Cases 4 and 5 are examples of this group.

CASE 4

Female, aged 56, weighing 186 lbs. For the past year she had had headaches, hot flushes and shortness of breath on any exertion. The heart is enlarged, very little arterio-sclerosis, and no albuminuria. The blood pressure, taken on several occasions, was 190-98. On April 2nd was put on sodium sulphocyanate, five grains once a day. There was a gradual fall in pressure until April 24th, when it was 158-85. The dose was then reduced by half and continued until May 3rd when the pressure measured 138-75 and the drug was stopped. She was entirely relieved of all her symptoms and said that she "felt like a new woman." The pressure remained at the normal level for three weeks more and then commenced to climb again but was easily controlled by the drug.

CASE 5

Female, aged 46, housewife. She complained of dizziness, headache, and hot flushes for the past two months which were steadily getting worse. She was a large heavy woman, menopause more than seven years before. The blood pressure, taken on several occasions, was about 180-110. The heart was large, no murmurs heard, and no evidence of arterio-sclerosis. Urine, negative. On April 26th she was put on sodium sulphocyanate, five grains once daily. By May 5th the pressure had fallen to 140-90 and the drug was discontinued. She was greatly relieved of her symptoms and was sleeping much better. She did not require any further medication until May 29th, when a similar dose was given with similar results.

It happens that in the four high pressure cases given the patients were all females, but equally good results occurred in men.

While the number of patients treated in our series is only in the seventies, our results show that in the sulphocyanates we have a symptomatic remedy which may often be of value in a most distressing condition.

CONCLUSIONS

- 1 Sodium sulphocyanate causes a fall in the blood pressure, especially in the systolic, with usually no change in the rate of the heart.
- 2 This fall occurs when the pressure is normal as well as when it is abnormally high.
- 3 In patients showing much kidney damage or arterio-sclerosis the effect is least evident but usually occurs to some extent.
- 4 The best results are obtained in the large class coming under the heading of "essential hyperpiesis."
- 5 The sulphocyanates have been observed to have a sedative effect and are often mildly hypnotic.
- 6 They are easy to administer, and not unpleasant to take in an aromatic mixture.
- 7 A dose of $2\frac{1}{2}$ grains twice or thrice daily is sufficient to obtain the effects.

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THE PREVENTION OF MATERNAL MORTALITY IN MANITOBA*

BY ROSS MITCHELL, M D,

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NOT a little heart burning was caused by the appearance of the report, "Maternal Mortality in Canada," compiled by Dr Helen MacMurchy, Chief of the Division of Child Welfare of the Department of Health, Ottawa, Canada. This official report, which appeared in February, 1928, showed that from July 1, 1925, to July 1, 1926, there were 1,532 maternal deaths and 237 199 births yielding a maternal mortality rate of 6.4 per 1,000 live births.

It will be observed that Manitoba has the unenviable position of having the highest rate 7.7 per 1,000 live births, followed by British Columbia, Ontario, and New Brunswick all with rates of 7 or over. So far as our province is concerned it appears to have been unfortunate in the period selected for review, as the rate, 7.7 maternal deaths per 1,000 live births, has never been reached before or since.

In Manitoba from 1921 to 1927 inclusive there have been 590 maternal deaths. The maternal death rate per 1,000 live births for Manitoba for the year 1927 is 4.8, or if three doubtful cases are included 5.0. This compares favourably with the rate of 7.7 for the period July 1, 1925 to July 1, 1926.

Let us try to think what is contained in this record of 1,532 maternal deaths in Canada in one year. Other physiological functions are performed for the benefit of the individual alone, but parturition is performed for the benefit of the race, and in performing it the mother hazards her health and even her life. How much, then, does society owe to mothers! What safeguards should be thrown about them in this high and holy duty! Yet in this age of our vaunted civilization four women in Canada per day die in

childbed. The only disease that kills off more Canadian women between the ages of fifteen and fifty is tuberculosis, and the tuberculosis death rate is diminishing, while the puerperal death rate is stationary or even increasing. Compared with European countries, Canada's position is far from satisfactory. Were the maternal mortality rate in Canada the same as in Denmark or Holland one thousand of these lives would have been saved. Compared with Great Britain, Canada has half as many maternal deaths with less than one third as many births. There is no need to stress the tremendous tragedy revealed in these figures: the loss of women in the prime of youth and beauty, the desolate homes, the motherless children. Let us consider, rather, the causes of maternal deaths and how they may be prevented.

The International List of Causes of Death, now adopted by all civilized countries, lays down eight main causes of puerperal deaths:

- 1 Accidents of pregnancy, which include abortion, ectopic gestation, moles, hyperemesis, retroversion of the gravid uterus.

- 2 Puerperal hæmorrhage, including accidental hæmorrhage, placenta prævia, post-partum hæmorrhage, adherent placenta.

- 3 Other accidents of labour, such as Cæsarean section, application of forceps, rupture of uterus, difficult labour, abnormal presentation, shock.

- 4 Puerperal septicæmia.

- 5 Puerperal phlegmasia alba dolens, embolus, sudden death.

- 6 Puerperal albuminuria, and convulsions.

- 7 Following childbirth (not otherwise defined), including puerperal insanity.

- 8 Puerperal diseases of the breast.

In the figures under review, as given by Dr MacMurchy, sepsis, or puerperal septicæmia, as in nearly all other countries, heads the list with

*Read before the North Western District Medical Society, Neepawa, February 28, 1928, and the Brandon and District Medical Association, April 30, 1928.

418 deaths, or 27 per cent of the total, hæmorrhage comes next with 357 deaths, or 23 per cent, toxæmia, including eclampsia, third with 344 deaths or 22 per cent, dystocia with 87 deaths, or 6 per cent, embolus, with 87 deaths, shock, with 63 deaths, or 4 per cent, ectopic pregnancy, with 33 deaths

It must be conceded that, even with the greatest possible care, there is a certain inevitable risk attaching to childbirth. It has been calculated that this risk is 1 per 1,000 live births. The risk will vary with the accessibility of assistance during childbirth and the character of the assistance available. Thus in a well organized, thickly settled district, with good roads and means of communication, the inevitable risk will be less than when these conditions do not obtain. To some extent this explains the discrepancy between countries such as Holland and Denmark, on the one hand, and Canada on the other. Yet we cannot lay the flattering unction of difference in physical conditions too much to our souls. The difference between these countries and ours in the maternal mortality rates is too great to be thus easily explained away.

Let us review each of the causes of death and note what steps may be taken to ward off the threatening danger. Apart from criminal abortion and sepsis, abortions and moles do not carry a high mortality. How frequent abortion is, is not known. Compulsory notification of pregnancy, which would afford a means of determining the frequency of abortions, has been proposed but it is not likely to come into force. The best treatment of abortion is judicious conservation, with operative intervention only when part of the ovum is retained.

Of the varieties of puerperal hæmorrhage, post-partum hæmorrhage claims by far the most victims. Too often post-partum hæmorrhage results from improper treatment, especially in the third stage. There is a tendency among some medical men to pride themselves on the shortness of time required to complete a maternity case. No sooner is the child delivered than the unfortunate uterus is squeezed and rubbed over the vertebral column as over a washboard, the placental cord is pulled on, and in less than five minutes the placenta is away and the doctor walks off, leaving the nurse to deal with the hæmorrhage which, unfortunately, is only occasionally excessive, but practically always occurs. In a normal labour the third stage is the most important, so far as the obstetrician is concerned.

No attempts should be made to massage the fundus except in cases of hæmorrhage, or to express the placenta until the placenta has completely separated from the uterine wall, and then expression should be attempted only during contraction of the uterus. Bleeding from the uterine sinuses is arrested by contraction and retraction of uterine muscle fibres, and exhausted muscles will not properly contract or retract. If there is any doubt as to the contractile and retractile powers of the uterus an intramuscular injection of pituitrin and aseptic ergot should be given as soon as the placenta is delivered. Accidental hæmorrhage is generally associated with toxæmia, and rise of blood pressure, or the appearance of albuminuria, should put the obstetrician on his guard. In placenta prævia the first "spotting" or small hæmorrhage is too often disregarded. No attention is paid until the case becomes one of desperate emergency. Cases of placenta prævia should be treated in the hospital, if at all possible. As soon as a definite diagnosis of this condition is made the pregnancy should be terminated.

With regard to operative measures in childbirth, there is reason to think that the adoption of Listerian principles and of anæsthesia, by making safer and less painful operations which formerly were rarely performed, has actually increased the risk in childbirth. Operative intervention is more frequently and lightly entered upon, not always because the doctor thinks there is an indication, but often in response to the pleadings of the patient and the relatives to "do something." Forceps should not be applied unless the well defined indications for their use are present. In the Winnipeg General Hospital the hypodermic needle has often replaced the forceps. A patient who has secondary uterine inertia is given 1-6 grain of morphine with 1-200 grain scopolamine. Sleep often follows and after waking the pains return and delivery is accomplished naturally. That it is possible to conduct even a teaching clinic with comparatively infrequent resort to operations is shown by the records of the public maternity ward of the Winnipeg General Hospital. In the period July 1, 1923, to Dec 31, 1927 there were 2,203 deliveries with 171 forceps operations, or 7.7 per cent, and 49 versions, or 2.2 per cent. In this period there were 7 puerperal deaths, giving a maternal mortality of 3.17 per 1,000 deliveries, about half the rate for Canada at large. Pituitrin is never used in this clinic until the second stage is completed.

We know there is a difference of opinion on this point, but we feel safer when not using this potent drug during the second stage

With regard to puerperal septicæmia there are two schools of thought, one contending that infection is always exogenous, introduced from without by hands or instruments, the other, that it is autogenous, the organisms being present in the patient's body. The truth lies probably between these extremes. Infection, no doubt, is usually introduced from without, but under certain circumstances germs within the vagina or elsewhere in the body may gain access to the uterine cavity and the blood stream. Prof R. W. Johnstone¹ of Edinburgh, in a recent address, urged his hearers to cultivate the obstetric conscience. Every labour should be conducted on sound surgical principles. If these are followed, a simple technique, even with little equipment, will produce wonderfully good results. In 1927 the Victorian Order of Nurses in Canada attended 11,016 births. Their figures indicate an average of 2.5 maternal deaths per 1,000 living births where physicians were in attendance. At a conference on puerperal morbidity and mortality, called on the initiative of the British Medical Association on January 11 last, Dr Leonard Colebrook² raised the question of the practicability of preventive immunization against the risk of puerperal infection. The hæmolytic streptococcus as the cause of puerperal fever has been known for many years, but the results of most workers along this line of inquiry have been negative. Certain experiments with vaccines have, however, been made abroad, for which encouraging results are claimed. Jotten, in Germany, starting with small doses of a vaccine found an increase in phagocytic power, and a steady decrease in the percentage of morbidity as the dose was given in larger quantities. However, it is certainly premature, at present, to suppose that the parturient woman can be successfully immunized, but the idea gives reason for serious thought.

The treatment of puerperal septicæmia is so unsatisfactory that every effort must be made to prevent it. In hospitals the investigation of every instance of post-partum elevation of temperature may reveal some focus of infection, such as a nurse or doctor with tonsillitis, sinusitis, or ozæna. In Manitoba, puerperal septicæmia is a notifiable disease, but very few of the existing cases are reported. Since October 1, 1926, in Great Britain, where notification of puerperal

septicæmia has been in force for many years, an order has been made requiring notification of all cases of puerperal pyrexia. This is defined as follows: "Any febrile condition occurring in a woman within 21 days after childbirth or miscarriage in which a temperature of 100.4°F (38°C) or more has been sustained during a period of 24 hours or has recurred during that period." The doctor is asked to state on the notification form whether he desires assistance, and, if so, whether in the form of a second opinion, bacteriological examination of blood or lochia, hospital accommodation, or trained nurse. The local authorities are urged to take steps to provide the necessary facilities.

The conditions classed under the heading "Puerperal Albuminuria and Convulsions" are responsible for many deaths. While we can never hope to be free of toxæmia, we can, with prenatal care, prevent a fatal termination in the majority of instances. The prenatal clinic at the Winnipeg General Hospital was established in January 1921, and since that time to December 31, 1927, 2,791 women have passed through the clinic. There have been many cases of toxæmia, but in no instance has a single patient who had prenatal care developed eclampsia, and, so far as I am aware, there has not been a single death from toxæmia among women who attended the clinic. Toxæmia rarely occurs as a bolt from the blue. In women who have regular routine antenatal examinations any increase in blood pressure above 140, or the occurrence of albuminuria or cedema, calls for treatment to be instituted at once. The time is coming when eclampsia will be ranked with typhoid fever as a measure of the ignorance of a community in matters of public health. Intelligent prenatal care should almost wholly prevent eclampsia. Toxæmia is particularly harmful to the fetus *in utero*, and early and adequate treatment may save not one life but two. A promising field of inquiry is opened up by a paper read before the Pennsylvania State Society on October 6th, 1927, by Harold A. Miller, M.D., and D. B. Martinez, M.D.³, of the University of Pittsburgh. In this communication they reported a series of 122 eclamptic and pre-eclamptic cases treated with "Heparmone," a liver extract. No pre-eclamptic woman developed convulsions and 14 consecutive cases of eclampsia recovered except one who had convulsions five days before treatment and was *in extremis* when first seen.

Puerperal insanity is not a frequent cause of

death, but is a source of great anxiety to all concerned. The frequent connection between post-partum hæmorrhage or sepsis, on the one hand, and the onset of puerperal insanity, on the other, deserves to be noted.

Mastitis only rarely causes death of the mother, but may contribute to the death of the child through interference with breast nursing and the consequent risk of gastro-intestinal infection, and it may also be a factor in the production of cancer of the breast in later life.

All authorities who have investigated the problem of maternal mortality have stressed the outstanding importance of pre-natal care. Sir George Newman, the Chief Medical Officer of the Ministry of Health of Great Britain, states "No sound progress can be made in the reduction of maternal mortality apart from ante-natal supervision. Such measures as inquiry into the previous obstetric history, the careful examination and control of the personal health, pelvic measurements, the estimation of disproportion between child and pelvis, and the determination of presentation, enable many risks to be foreseen and forestalled. Moreover, opportunity is thus afforded for the early recognition or treatment of concurrent conditions, such as toxæmia or venereal disease. It should become a matter of course and routine practice for every pregnant woman to place herself of her own accord, and at an early stage, under competent advice" (Maternal Mortality, 1924, H. M. Stationery Office). Dr. J. B. DeLee coined the phrase, "*Parturiens, ipso jacto, est in periculo mortis*". Prenatal care offers the only way out. With prenatal care there should be also post-natal care. Dame Janet Campbell in her government report, "The Protection of Motherhood," (London, H. M. Stationery Office, 1927), says, "The value of post-natal examination is not fully recognized. Every woman ought to be examined, say, four to six weeks after confinement to make sure that everything is normal, and no maternity hospital should be satisfied finally to discharge a woman without ascertaining that no damage has been done and that no pathological condition exists which could and should be repaired. If women leaving a maternity hospital, where the labour and puerperium have been under skilled supervision, are systematically examined, a certain number will always be found in need of gynecological, or rather medical, treatment of some kind, and the proportion would unquestionably be higher among women

delivered at home. If suitable treatment is sought without delay the patient may be saved much ill-health and physical disability, and may also be spared difficulty at any future confinement."

The value of a prenatal clinic in connection with a hospital is borne out by the following figures. In the Winnipeg General Hospital during the years 1917-1920 inclusive there were 2,480 live births and 25 maternal deaths, yielding a maternal death rate of 10.09 per 1,000 live births. In January 1921, a prenatal clinic was instituted. In the period January 1, 1921, to October 31, 1927, there were 5,444 live births and 28 deaths, yielding a maternal death rate of 5.14 per 1,000 live births. In other words the maternal mortality rate was almost cut in half after the institution of organized prenatal care. A post-natal clinic was instituted in this hospital on April 28, 1926, and has been doing valuable work.

So far we have considered the problem of maternal mortality from the standpoint of the relation of the medical attendant to the patient. What may be done by the State? First, existing regulations with regard to registration of births and deaths and the notification of cases of puerperal septicæmia should be strictly enforced. Secondly, in my opinion, it would be well to have an investigation made through the Department of Health in Manitoba into every maternal death. The occurrence of the outbreaks of puerperal infection in hospitals should also be investigated. The Hospital Committee of the Welfare Supervision Board, now in session, will, no doubt, consider the advisability of locating hospitals at strategic points in districts which at present are not served by existing hospitals. In some countries, such as Great Britain and Australia, maternity benefits are paid by the State. The province of Saskatchewan provides for a payment of \$25.00 to mothers in destitute circumstances, \$10.00 going direct to the mother and \$15.00 to the doctor or hospital. In 1927, 443 mothers were assisted to the extent of \$10.00 each, and 351 doctors, 6 nurses, and 11 hospitals received \$15.00 each, making a total of \$10,032.00. Whether these benefits fulfil the expectations, and whether this province should enter upon such a scheme, are matters for investigation and debate.

The community should have a direct interest in this problem of maternal mortality. The co-operation of Women's Institutes should be sought, municipalities should be urged to provide public

deviates from the normal is illustrated by Figs 1 and 2, which have been modified from those given by Abbott and Dawson⁸ in their valuable classification

CASE REPORT

R B, male, aged 29, was admitted to King Edward Memorial Hospital, Winnipeg, on February 10, 1926, with a diagnosis of pulmonary tuberculosis and congenital heart disease (right ventricular hypertrophy, probably interventricular communication)

Between the years 1913 and 1926 he had been treated at intervals in the Winnipeg General Hospital as an out patient and as an in patient. Complete general and special cardio vascular examinations were made

Family History—Father died at 46, of a "chest condition", mother died at 36, of dropsy. Two sisters were alive and well, one sister died from an unknown cause, two brothers died in infancy from an unknown cause, and two brothers, aged 20 and 40 respectively, were alive and well

Personal History—He was born on the boat coming to Canada, of Polish parents. He was never able to do much work on account of his heart condition, and had always been receiving medical attention. He always slept 7 to 8 hours nightly (with three pillows), his general activity was much restricted. He did not use alcohol or tobacco. Small pox in 1910

Present Illness—In 1914 he was in the Winnipeg General Hospital with a sore back. Following his discharge he felt weak and became tired easily. He was unable to take part in any of his former outdoor activities. This continued until 1918 when his feet began to swell and ulcers appeared on his legs. As these healed, others came. From 1923 his weakness gradually became more marked and he was unable to do any work. In the summer of 1924, following some over exertion, he had a chill. A few days later he began to cough. The cough was slight at first and non productive

EXTRACTS FROM WINNIPEG GENERAL HOSPITAL HISTORY

"A striking feature was the marked clubbing of the fingers and toes. The nose was bulbous and the lips pendulous. Cyanosis was extreme, the entire body being of a muddy, bluish colour. The apex beat (maximum impulse) was $5\frac{1}{4}$ inches from median line, in the sixth left interspace. The outer point of impulse was $5\frac{1}{4}$ inches from the median line in the sixth interspace. Systolic and faint diastolic murmurs were audible. The maximum systolic murmur was just to the left of the sternum, in 3rd and 4th intercostal spaces. The artery walls were not palpable. Pulse, 70-90, was small, regular, not collapsing nor showing any deficit. Polycythemia was marked, the red blood count varying

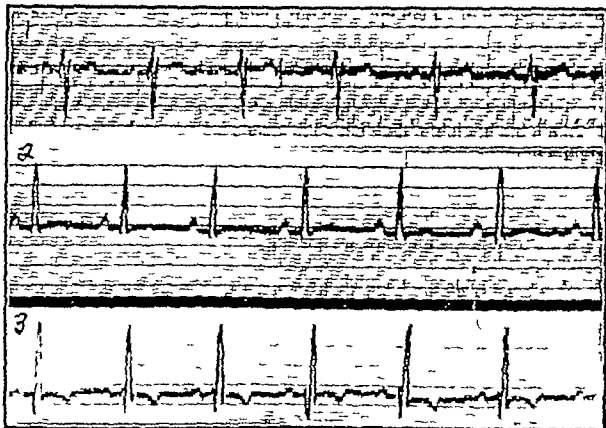


FIG 3—Electrocardiograph tracing (Retouched to facilitate reproduction)

from 10,160,000 to 8,500,000, hæmoglobin, 100 per cent. The Wassermann was negative. Urine, negative. No record of blood pressure findings. An electrocardiogram (Fig 3), taken August, 1924, showed the following peculiarities—

"First lead, exaggerated 'S' wave. Second lead, negative. Third lead, sharp inverted 'T' wave. Right ventricular preponderance.

"The condition was diagnosed as that of 'congenital heart, with probably interventricular communication' (Dr A. J. Burrage)"

A radiogram, taken December, 1925, is shown in Fig 4

The report of the radiographer (Dr J. C. McMillan) was that the heart and great vessels showed marked increase, and that there were definite changes in the lungs suggesting tuberculous lesions. It is to be regretted that a fluoroscopic examination was not made nor a left anterior oblique plate taken, because the writers are satisfied that the presence of an anomalous right arch would have been demonstrated

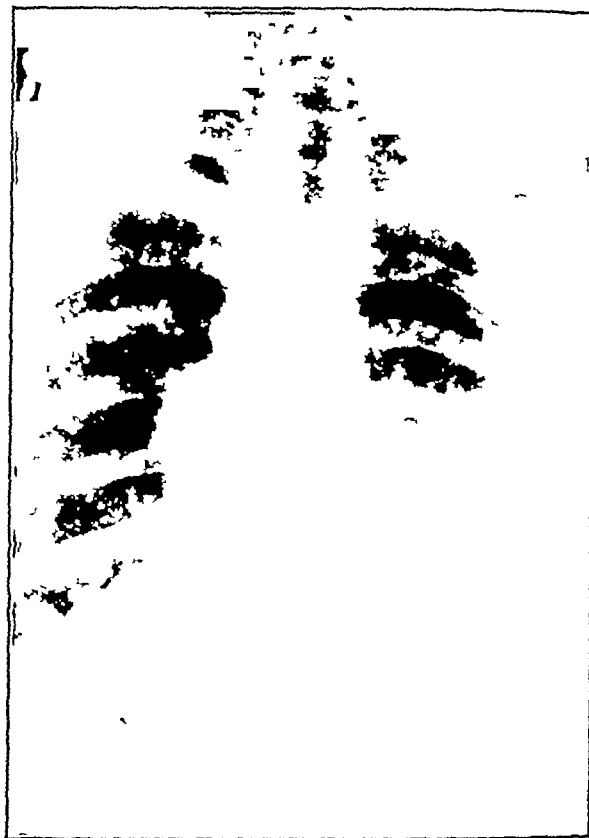


FIG 4—Radiogram. Marked increase in the size of the heart both to right and left, and of great vessels to right of median line. Enlargement of the shadow at hilum of right lung (Assman's sign), indicating dilated pulmonary vessels

During 1925 the severity of the cough increased, with considerable expectoration. During the last three months expectoration amounted to half a box per day, with a large amount of blood. The loss of weight was rapid. He reported to the Winnipeg General Hospital where his sputum was found to contain tubercle bacilli. He was therefore transferred to King Edward Hospital

The history on admission to King Edward Hospital showed that he had had a cough for one year, with expectoration for the last three months, he spat up three or four mouthfuls of blood every time he coughed. He had lost twenty five pounds in the last two years, weakness and malaise had been progressively worse since 1914, he had had dyspnea for as long as he could remember, cyanosis, clubbing of the fingers and toes, and palpitation

Examination there showed marked cyanosis and clubbing of the fingers, weight, 150 pounds, height, 5 ft. 6 inches. His condition was diagnosed as that of an advanced pulmonary tuberculosis, showing marked involvement of the right upper lobe, with some dullness over the left upper lobe and late post tussive crepitations on both sides. He died August 12, 1926

Post Mortem Examination—The general characteristics were as previously noted in the history. Especially marked were multiple scars from old ulcerations on the legs, and the clubbing of the fingers and toes. On removing the sternum one was impressed with the width of the pericardial sac. Both pleural cavities were obliterated and in the right there was extensive fibrous adhesion. Both lungs showed old tuberculous lesions there being cavitation and scarring in both apices. An extensive miliary tuberculosis had invaded the remaining parenchyma of both lungs.

HEART AND GREAT VESSELS The heart was a large muscular organ and one was impressed by the degree of ventricular hypertrophy, the transverse diameter being 12 cm and the distance from coronary sulcus to apex 10 cm. The muscular portion appeared to be composed of both ventricles equally, separated by a prominent inter-ventricular sulcus. Arising from the base of the heart only one great vessel was to be seen, which measured 3.5 cm. in diameter. This vessel curved to the right, giving off in the following order the left innominate, right carotid and right subclavian arteries, and descended on the right side of the vertebral column behind the right bronchus. The pulmonary stem was not present. The arteries entering the hila of both lungs were seen to be branches from a trunk which arose from the descending portion of the aorta. This trunk passed upwards from behind the right bronchus. An additional small artery arose below this trunk from the anterior aspect of the aorta, and passed to the lower lobe of the left lung. A large thin walled, trumpet shaped vessel emerged from the left posterior wall of the right aortic trunk, the size of its communication with the aorta being 0.5 cm. in diameter, and flared out to empty into the hilum of the right lung. The venous return from the lungs and the systemic return to the heart were normal. The heart when opened showed marked hypertrophy of the ventricular walls, the right being 2 cm and the left 1.5 cm. thick. The two ventricles communicated freely with each other over the top of the interventricular septum, which presented a smooth upper margin, completely covered with endocardium. Arising from the base of the heart above the upper free border of the interventricular septum was the thick walled aorta. The left atrium was normal in size, the right atrium was greatly dilated.

Spleen, weight 450 grm. Liver, weight 2,200 grm. Kidneys, weight 220 grm. Remaining viscera negative.

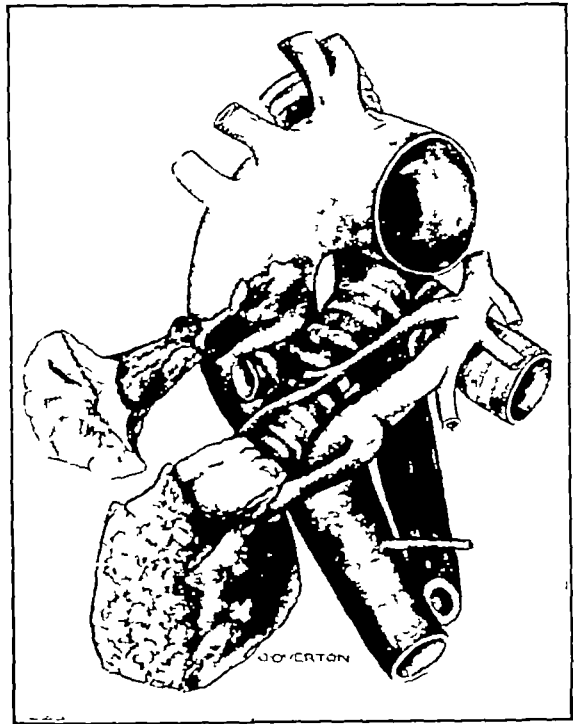


FIG 6—The aorta, trachea, and oesophagus.

Note the trunk (left aortic root) arising from the descending aorta giving branches to hila of lungs. The communication between the dilated right pulmonary artery and the aorta by means of the minute ductus arteriosus can be seen. A portion of the right lung and an enlarged hilum gland are present.

EMBRYOLOGY OF THE CONDITION

The embryological explanation of these anomalies is of interest.

In the human embryo there develop six branchial arteries which pass dorsally. These arteries when fully formed are arranged as illustrated in Fig 7.

The next step in development is the disappearance of the vessels of the first arch. A little later the second branchial vessel also degenerates. Then that portion of the dorsal trunk which intervenes between the third and fourth branchial vessels disappears, so that the dorsal trunk anterior to the third branchial arch is cut off from its connection with the dorsal aorta and forms, together with the vessel of the third arch, the internal carotid. The ventral trunk anterior to the point of origin of the third vessel becomes the external carotid, and the portion intervening between the third and fourth vessels becomes the common carotid. The rudimentary fifth vessel vanishes, as did the first and second, but the fourth persists to form an aortic arch, there being at this stage in development two complete aortic arches. From the sixth arch the pulmonary arteries are de-

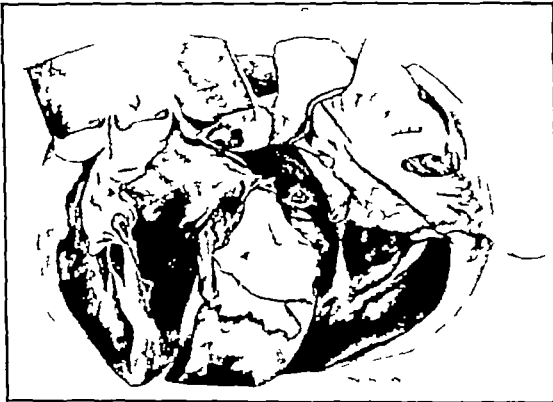


FIG 5—The heart laid open from behind. The thick walled ventricles and interventricular septum are clearly seen. Note the hematoma on the aortic cup.

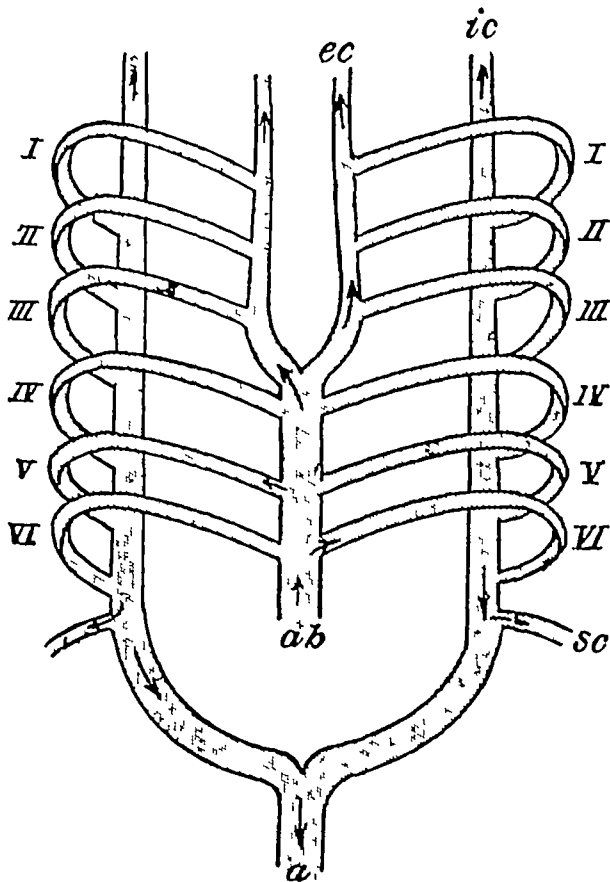


FIG 7—Diagram illustrating the primary arrangement of the branchial arch vessels.
a, Aorta, ab aortic bulb, ec external carotid, ic internal carotid, sc subclavian, I-VI, branchial arch vessels (After McMurrich)

lived That portion of the right sixth arch which intervenes between the point of origin of the pulmonary artery and the right aortic arch disappears, while the corresponding portion on the left side persists until after birth, forming the ductus arteriosus, as shown in Fig 8

A comparison of Fig 9 (R B) with Fig 8 (normal) illustrates well the unusual arrangement of the arches which were present The right aortic arch has persisted and it therefore gives rise to the following branches, a left innominate, a right common carotid and a right subclavian The distal portion of the left aortic arch has disappeared The proximal portion of the left aortic arch has persisted and from it are given off numerous branches which pass to the hila of both lungs, and are responsible for the aeration of the blood We believe that these branches are in reality hypertrophied bronchials Meckel first suggested the possibility that dilated bronchials might replace pulmonary arteries when the ductus arteriosus was completely closed

The sixth branchial arch is of interest There

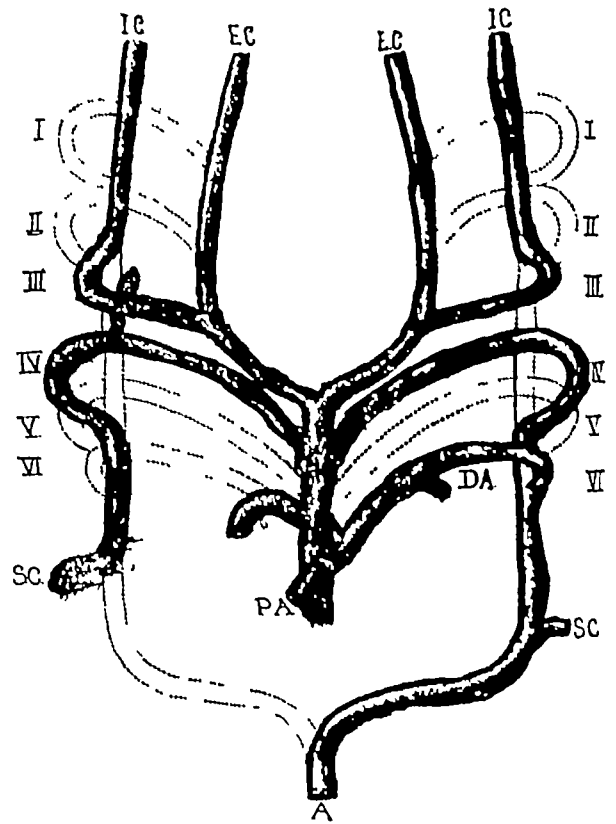


FIG 8—Diagram illustrating the changes in the branchial arch vessels

A Aorta DA ductus arteriosus EC external carotid, IC internal carotid, PA, pulmonary artery, SC subclavian, I-IV, aortic arch vessels (After McMurrich)

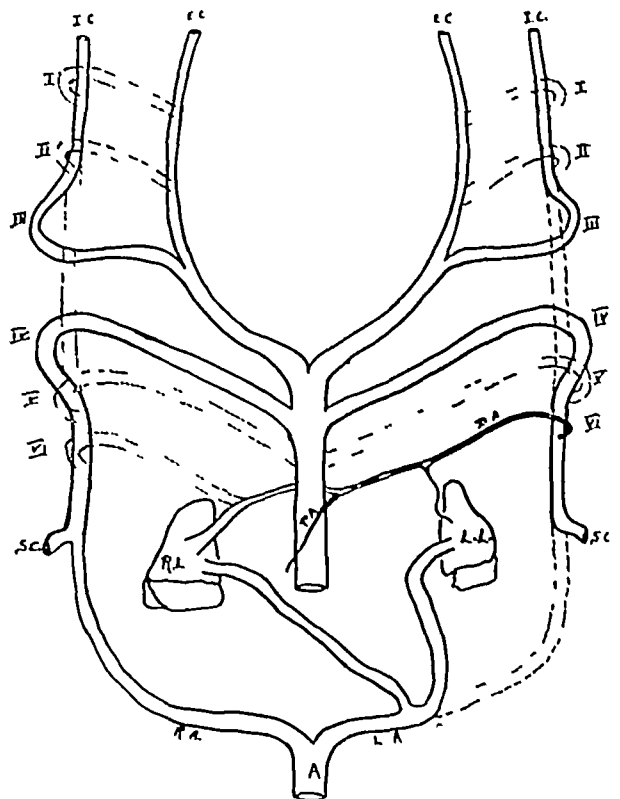


FIG 9—The variations of branchial arch vessels in R. B

is complete pulmonary atresia. The ductus arteriosus has persisted and maintained a very small opening with the arch of the aorta. This passes to the right and becomes continuous with a trumpet-shaped thin-walled right pulmonary artery which enters the hilum of the right lung. There is no left pulmonary artery.

SUMMARY

This case presents the following cardiac anomalies:

- 1 Incomplete double aortic arch (intermediate portion of the left arch being deficient)
- 2 Dextroposition of the aorta
- 3 Pulmonary atresia
- 4 Ductus arteriosus, persisting as a small vessel communicating only with the hilum of the right lung by way of the right pulmonary artery
- 5 Pulmonic circulation maintained by means of hypertrophied bronchials, branches of the left aortic root
- 6 Incomplete ventricular septum, the endocardial cushions having failed to fuse

The following observations of clinical interest may be made. Nature had attempted to compensate for the deficient aeration of the blood. The red cells were 200 per cent, hæmoglobin 100 per cent, therefore the blood had the normal carrying capacity for oxygen and one wonders whether the increase in red cells was a compensatory arrangement.

The blood pressure of the pulmonic circulation could have been little, if any, below that of the systemic.

II DETAILED DESCRIPTION OF HEART AND AORTA

(MAUDE E. ABBOTT)

Heart

The heart is a heavy muscular organ with a broad ventricular part measuring 12 cm across at its base, and 10 cm in length, with rounded slightly bifid apex, composed about equally of both ventricles. From about the middle of its base arises the greatly dilated and thick-walled aorta between the much enlarged right auricle and smaller left auricle, both of which are visible anteriorly. At first sight no other vessel is seen, but examination reveals a small thin-walled pulmonary artery, 2 cm long and 1 cm wide, which emerges from the musculature just

in front of the root of the aorta and passes obliquely up and to the left, dividing into two small branches. It is thus patent in its distal portion but is completely closed at its origin from the heart just below the valve, which is represented by a tiny rudimentary fold of fibrous tissue separating two minute sinuses.

The heart has been laid open from behind by incisions through auricle and ventricle, leaving the intact interventricular septum exposed. This is a massive muscular structure, nearly 2 cm thick in its lower portion, and incomplete above, where it ends in a rounded muscular free border which forms the lower margin of a huge defect, 4 cm long by 2 cm wide, extending from just in front of the pars membranacea septi to the junction of the anterior and left posterior (right and left coronary) aortic cusps. The endocardium covering the free border of the defective septum is thickened and the septal cusp of the tricuspid valve takes origin in part from it. The dilated aorta, which is 9 cm in circumference and very thick-walled, arises above the defect, 4 cm of its lumen lying in the left, and 5 cm in the right ventricle (*rechtslage* or dextroposition), it has three semilunar cusps, of which two, the right and left coronary, are very large, 3 cm in length, screening roomy sinuses of Valsalva, toward the upper border of which lie the large and patulous right and left coronaries, the contiguous halves of these two cusps are extensively fenestrated and behind the anterior one in the depths of its sinus is a small calcareous nodule suggesting an obliterated raphe. The third aortic segment (right posterior or free cusp) is much smaller than the other two and has a peculiar interwoven structure, it is fused with the adjacent half of the anterior (right coronary) cusp and between the layers of the commissure so formed is a large hæmatoma, apparently the result of the impact of the current of blood entering from the right auricle and impinging at this point on its way into the aorta. Just anterior to this cusp in the depths of the angle formed between the anterior wall of the heart and the base of the defective interventricular septum is a short muscular partition 0.5 cm long, which is the posterior wall of the rudimentary pulmonary conus, which admits a small probe and then ends blindly just below the obliterated pulmonary orifice.

The tricuspid valve lies posteriorly and to the

right of this rudimentary conus. Its septal cusp is of normal shape and structure, but arises in part from the posterior part of the upper border of the defective interventricular septum, and in part from the adjacent septum. Its marginal and infundibular cusps are partly merged with each other and the latter has many anomalous fenestrations, behind the attachment of the marginal cusp to the myocardium is a calcareous mass the size of a bean. The muscle of the right ventricle is enormously hypertrophied (1.5 to 2 cm thick), but its cavity is only slightly enlarged (simple hypertrophy). The left ventricle on the other hand is very roomy, and its walls are also much thickened (1.5 cm), though less than on the right side. The mitral valve is normal and the left auricle is of normal size, but the right auricle is greatly dilated with hypertrophied walls. The auricular septum is entire and the foramen ovale is completely closed.

The Aortic Arch and Descending Thoracic Aorta

The specimen consists of a right aortic arch and its branches with the trachea at its bifurcation and the right bronchus attached to a portion of the hilum of the right lung, and the œsophagus. The ascending arch has been cut off about 3 cm above the heart and at this point the lumen is 3.5 cm in diameter. It curves to the right instead of to the left, descending on the right side behind the right bronchus and gives off, in the following order, the left innominate, right carotid and right subclavian arteries, diminishing gently as it does so, so that just after the origin of the latter vessel it is 2.5 cm in diameter. About 1.5 cm below this point there emerges from the left posterior wall or the right aortic trunk a thin-walled tube about 0.75 cm in diameter, which expands about 1 cm from its origin in a bulbous fashion and presents an orifice 1.2 cm in diameter of a vessel which apparently entered it and which may have been the right branch of the atresic pulmonary artery. After this opening, the thin-walled vessel resumes its previous calibre and then dilates again, gradually expanding in trumpet fashion until after a course of 9 cm it presents a flared-out end 3 cm across, which has been cut off by the pathologist, who states that at this point it entered the hilum of the right lung and had no connection whatever with the

left lung, apparently functioning as a right pulmonary artery. Internally, this cut end presents an atheromatous surface. At a point 2.5 cm below the entrance of this curious structure the descending aorta gives off from its left wall a thick-walled trunk of about equal diameter to itself (2 cm), which curves upward behind the right bronchus occupying the position of the primitive left dorsal aorta, and is undoubtedly a persistence of the proximal part of this structure (persistent left aortic root). About 1 cm from its origin this anomalous left aortic trunk bifurcates into two branches, the superior, larger one, curves obliquely upward to the left giving off in its course four branches, one of which enters the hilum of the right lung anteriorly, and the other three (which are cut off) probably passed to the left lung, and served as bronchial arteries, the final distribution of this superior branch of the left aortic root is unknown, for it has been cut off about 4 cm from its origin, but from its direction it probably supplied a part of the distribution of the left subclavian artery. The inferior and smaller branch of the left aortic root is about the size of a slate-pencil, passes into the hilum of the right lung behind the right bronchus, it undoubtedly functioned as a right bronchial artery. About 1.5 cm below the left aortic root another anomalous vessel emerges from the left wall of the descending aorta, which probably also went to the left lung. The œsophagus lies behind and to the left of the aorta in its entire length. The trachea lies in front of the œsophagus and behind the transverse arch, but after its bifurcation the right bronchus passes outward to the right lung in front of the left aortic root, the upper branch of which emerges at the bifurcation of the trachea and passes upward and to the left *in front* of the left bronchus to its destination on the left side of the body.

REMARKS

This rare case is of special interest because of the remarkable adaptations which had facilitated the course of the blood and so permitted the patient to attain a relatively mature age, in the presence of a pulmonary atresia and suppression of the normal development of the left aortic arches, which were apparently the primary lesions. These adaptations are IN THE HEART, (a) The incomplete development of the inter-

ventricular septum and the dextroposition of the aorta, which vessel received all the venous blood from the right chambers above the defective septum, as well as the arterial blood from the left side, (b) the enormous hypertrophy of the musculature of the right ventricle which propelled the blood from the right auricle, first into the stenosed pulmonary conus and then into the aorta, and the hypertrophy and dilatation of the left ventricle which assisted the right in pushing the blood through the aorta into the lungs. IN THE AORTA, (a) The large varicose trumpet-shaped tube which apparently represented the patent ductus and anomalous right pulmonary artery, and evidently carried the mixed venous and arterial blood from the heart to the right lung for aeration, (b) The rich

arterial supply to both lungs from the persistent left aortic root apparently fulfilling the function of the bronchial arteries, (c) The anomalous vessel from the descending thoracic aorta, which from its direction probably furnished an additional path for blood to the left lung

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THE TREATMENT OF EPILEPSY*

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THIS paper will have to do, primarily, with the treatment of epilepsy as it is carried out at the Ontario Hospital, Woodstock, with special reference to the value of Phenobarbital (Luminal), in the larger dosage, in bringing about the arrest of seizures

Provincial hospital treatment along modern lines appears to be the best means of handling the epileptic problem. The ideal arrangement would be to have all the epileptics of the province treated in one hospital. Accommodation should be provided for two main groups—

1 The defective, demented, and the psychotic epileptics

2 The sane epileptics

The buildings for the two sexes are best kept widely separated on the same grounds, being divided by some natural barrier, such as a stream or body of water. Ample accommodation is necessary, to allow of segregation according to mentality and behaviour. The necessity of this is obvious to the most casual observer who visits the wards where such a provision does not obtain.

For purposes of treatment, all admissions

would resolve themselves into one of two main groups, based mainly on prognosis (1) those requiring protracted treatment and care, (2) those for temporary hospitalization

The first group embraces those who are (a) epileptic, on a mentally defective basis, (b) demented, secondarily to chronic epilepsy, and (c) the epileptic psychotic patients, in whom the epilepsy *per se* forms a minor part of the whole picture. Even though their seizures were arrested they would be unable to earn a livelihood in a competitive labour market. Some, owing to asocial habits or abnormal behaviour reactions, cannot be cared for in the home. For this type of patient proper nourishment, regularity of rest, work and recreation with direct supervision under hygienic conditions, together with moderate medicinal treatment, would do wonders towards making them a happy, contented and useful people. This is in reality the colony system.

Under the second head comes that type of patient who is commonly called the "sane epileptic," who, if his seizures were arrested, could take his place in the economic world, and whose intelligence is of such an order that he would carry out, after he left the hospital, the routine

*Read at the Spring Meeting of the Ontario Neuro-psychiatric Association, London, Ont., on June 11th, 1928

factors in so-called reflex epileptic types Zabriskie⁶ states, "it is fairly safe to say that whenever the diagnostic criteria of production of a fit by stimulation of the irritative focus, etc., are satisfied, removal of the focus will cure the epilepsy." In accepting his statement one should take into consideration cases of long standing that may have acquired the epileptic habit of spontaneous discharge, in which this would not obtain.

A cold shower on rising, followed by a brisk rubdown, is to be particularly recommended for epileptic patients of the more or less rugged type. Full co-operation of the patient is desirable here, and time is well spent in securing such co-operation. He enters into it with much more zest and enthusiasm, if he feels he is doing so of his own free will and accord, rather than under compulsion. Once he commences, he understands it is to be routine. No fads are indulged in. He is made to feel that when he leaves Woodstock he can carry his healthful practices over into his life outside. The training he gets in the care of himself and others is comparable to that secured in sanatoria for the treatment of tuberculosis in the early stages. He is made to feel the importance of general health measures, regularity of habits, and the strict adherence to therapeutic measures laid down for him.

The diet is simple, readily digestible and anti-constipating. Bran is incorporated in the morning meal. The principal meal is at midday. Animal protein, in replacement amounts, is given in some form at this meal, together with abundance of fresh vegetables in season. Here again the food is not widely different to that in his own home. The ketogenic dietetic treatment of epilepsy runs foul of this principle, and one that there is difficulty in having the patient consistently follow after he leaves the hospital. This is an important point in dealing with the group under consideration.

An outline of this form of treatment may be given at this point. Periods of starvation have been employed in the treatment of epilepsy, being based on the observation, that, during fasting and acute febrile illnesses, the seizures were markedly lessened. In the chemical study of patients so treated, the most striking changes found were a lowered blood sugar, a ketosis-acidosis, and a slight lowering of the carbon-dioxide combining power of the blood.

Wilder,⁷ and later Peterman,⁸ produced these same chemical changes by developing a so-called

"ketogenic diet." By keeping the carbohydrates and protein low and the fat content in the diet high, insufficient glucose is available for complete oxidation of the fat into its normal end-products, carbon dioxide and water. This incomplete combustion results in the liberation of intermediate products, the ketone bodies, chiefly aceto-acetic acid, which break up into acetone and beta-oxybutyric acid, present in the blood in the form of salts, and are excreted in the breath and urine. This is the condition of ketosis-acidosis.

The carbohydrates, fats and proteins are classified as ketogenic and antiketogenic substances; the former are substances producing aceto-acetic acid in the absence of glucose bodies, the latter are substances producing glucose bodies which prevent the formation of ketone bodies. The values are as follows—

	<i>Ketogenic</i>	<i>Antiketogenic</i>
Carbohydrates	0%	100%
Fats	86% (Approx.)	14% (Approx.)
Protein	33% (Approx.)	66% (Approx.)

Talbot,⁹ in working out diets, regards fat as 100 per cent ketogenic, carbohydrates 100 per cent antiketogenic, and protein half and half. According to these values, a proportion of ketogenic to antiketogenic foods in the usual diet is about 1 to 4. If the relationship of the ketogenic to the antiketogenic foods is 1.5 to 1, ketosis does not develop. "A 1.5 to 1 ratio means that the diet contains 1.5 grams of fat for each gram of carbohydrates and protein (combined)." "The protein allowance for any patient is one gram for each kilogram of the patient's expected body weight. The total caloric needs are 50 per cent above the basal requirements (Talbot¹⁰). " "With an increase of this ratio to 2 to 1 or more, a ketosis develops, and the higher the ratio the greater is the ketosis. Coincidentally with the marked ketonuria resulting from the diets of a higher ketogenic ratio, a reduction or cessation of attacks has occurred (Talbot, Metcalf and Moriarty¹¹). "

The changes in the diet are made slowly at about one to two week intervals. A 4 to 1 ratio is generally required before the symptoms completely disappear. This usually takes a period of two months. The patient is kept on the diet until he is free from seizures for six months. The diet is then gradually relaxed by increasing the carbohydrates 10 grams at a time, and reducing the fat in the corresponding amounts, maintaining the same value in caloric intake (Talbot⁹).

These changes are continued until the child is on a normal diet with a limited amount of carbohydrates. It is necessary always to exclude candy and other sweets from the final diet. Luther¹² states, "it is too early as yet to reach definite conclusions as to the permanence of the relief." Talbot⁹ reports complete symptomatic relief in at least 33 per cent of children, and definite improvement in nearly three-quarters. The results are accordingly good in "petit mal" and "grand mal," but less satisfactory in the adult than in the child. Excessive intake of sweets is followed by attacks. Talbot, Metcalf and Moriarty,¹³ who are very enthusiastic over this method of treatment, state, "The difficulties of the diet in epilepsy are the same as those experienced in the treatment of diabetes mellitus before the advent of insulin, good and bad results depending in large part upon how strictly and accurately the diet is followed. In both instances indiscretions in carbohydrates are usually followed by relapses."

The *modus operandi* of ketosis-acidosis in bringing about the clinical improvement is still a matter of conjecture. The view that the freedom from attacks is due mainly to the hypoglycemia produced is not substantiated by Talbot, Metcalf and Moriarty,¹³ in a three months' study of insulin therapy in conjunction with an ordinary diet. That the anæsthetic action of acetone may be the cause of the improvement is admitted by Talbot.⁹ If the arrest of seizures is brought about by the anæsthetic action of acetone, the patient producing his own drug by a method of diet admittedly difficult to maintain, one might well adhere to drug treatment, allowing the patient more or less freedom of action as to diet after he leaves hospital. A highly complicated diet is certainly not compatible with the facilities at hand for an adult taking his place in this work-a-day world. If the future proves that the ketogenic diet brings about a permanent arrest of the seizures, even though hospital treatment of one or two years is necessary, it would be worth while indeed.

The value of the salts of bromine has long been recognized in the treatment of this disease. Turner¹⁵ regards large doses of bromides as neither necessary nor effectual. Both the amount of the dose, frequency and time of administration, must be gauged by a study of individual cases. He does not look with favour on prescribing fifteen grain doses three times daily. The night dose is to be preferred.

The three common bromine salts of potassium, sodium and ammonium are those most commonly used. The potassium and sodium salts are the most efficacious according to Turner,¹⁵ and may be prescribed alone or in combination. The dosage of the combined salts must not exceed 45 to 60 grains in the 24 hours.

Gowers⁴ introduced sodium bichlorate in the treatment of epilepsy in certain cases where the bromides were of little value. This has been used at Woodstock in combination with strontium bromide, with favourable results.

The main disadvantages associated with the use of bromides are the skin eruptions, and a dulling or blunting of the faculties. This has been our experience especially in pushing the drug to sufficient dosage to bring about the complete arrest of seizures. The results obtained from the use of luminal have been comparatively so outstanding that at the present we use bromides only to a small extent. We have found bromides useful in moderate doses in a few cases where luminal, in sufficient dosage to control the seizures, was not well borne. We were not able to bring about an arrest of seizures in these cases however.

On this continent luminal enjoys an increasing popularity in the treatment of epilepsy, since its introduction from Germany, more than fifteen years ago, as an antispasmodic and sedative. It is a hypnotic in large doses. The threshold of hypnosis varies markedly in individual cases of epilepsy, and, in our experience at the Ontario Hospital, is much higher than in non-epileptics.

Dercum,¹⁶ in one of the earliest reports of an extensive use of the drug in epilepsy, found it exercised a remarkable control over the seizures. He limited the dosage to a maximum of 3 grains per day. No deleterious influence upon the mental life of the patient was observed. Again in 1922, he reported¹⁷ that "in the ordinary so called 'essential' form of epilepsy no remedy has proved of so much value as luminal." He limited the dosage to 1 to 1½ grains daily, given in one dose at bedtime. A great improvement was noticed in the general health of the patients so treated.

Cobb¹⁸ believes that luminal is a very useful drug in the treatment of epilepsy. He considers it unsafe to give more than 1½ grain doses, which should not be repeated more than once in the twenty-four hours.

Patterson, Daman and Levi,¹⁹ of Sonyea, in reporting the results of luminal therapy in a

but the change in general is remarkable. Salivation stops, cerebration is quickened, the physical strength returns, and the patient appears to be practically normal.

The method of administration of luminal at Woodstock is by the oral route. The dosage is divided according to whether the seizures are nocturnal or diurnal. In the majority of cases luminal is best tolerated given in the morning and evening. In some cases, where the morning dose of 3 grains was divided and given in the morning and at noon, the patient complained of drowsiness. This was not apparent when he received the full dose in the morning, as well as his evening dose. The luminal tablets are given at breakfast, in some cases at noon, and at the evening meal at 5 to 6 o'clock. This early administration of the evening dose does away in many cases with drowsiness the following morning.

Paterson, Damon and Levi,¹⁹ in investigating the other methods of administration of luminal in the form of its sodium salt, *viz*, subcutaneous, intravenous, and intraspinal, found that the intravenous method was the most rapid in bringing about therapeutic effects and was the method of choice in status epilepticus. At Woodstock, at present, in these cases we rely on chloroform anaesthesia to the surgical stage, together with double doses of H M C No 1 to continue its effects, or a chloral enema (grains 30-60). The results have been very satisfactory.

We are in agreement with Paterson, Daman and Levi,¹⁹ who state that, as luminal is a pol-

lative measure, it must not supplant attention to general hygienic measures, to improvement of the patient's general condition, the inculcation of regular habits, and medicinal treatments as indicated.

Constipation is the rule rather than the exception in our new cases. Obviously, this condition must be remedied before the best results are obtainable from luminal therapy. On admission to the wards the patient, if constipated, is given a large simple soap enema, and oleum ricini (oz 1½) at bed time. This is followed every night by Russian oil in sufficient quantities, together with magnesium sulphate once weekly. We do not put him on luminal, however, until he "registers," that is to say, he is allowed to have a few seizures for record and purposes of comparison.

In female patients changes in menstrual activity must be closely watched. Amenorrhea must be immediately treated by general and specific medicinal means, as seizures are very apt to recur during disturbances of menstrual function.

Many writers point out the beneficial effects of luminal therapy on the general behaviour reactions of epileptics. The patients so treated become more congenial, energetic and co-operative. This is especially true in cases of arrest in the sane epileptic. The very fact that his hopes are realized, and this type of patient is nearly always very hopeful, makes a marked difference in him generally. Introspection becomes less marked as his anxieties disappear. Self-confi-

TABLE IV

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
1917								0	1	5	2	2
1918	1	3	0	0	1	2	1	0	1	0	2	1
1919	5	0	1	1	1	0	2	1	0	6	0	2
1920	2	0	1	2	1	0	3	1	1	1	1	1
1921	0	0	2	0	2	1	0	0	1	2	0	1
1922	0	0	1	0	1	0	0	3	0	1	0	4
1923	0	0	2	1	1	1	0	0	6	0	2	2
1924	4	1	1	0	1	1	3	1	2	1	2	0
1925	0	1	1	0	2	3	0	0 L 1½	1	1	0	2
1926	5	0	1	0	0	0	0	0	0	0	0	0
1927	0	0	0	0	0	0	0	0	0	0	0	0
1928	0	0	0	0	0							

Treatment—August 24, 1925, Luminal grs 1½, q h s

dence is gradually re-established, and finally, after a year or so of freedom from attacks, he wants to again go out into the world to earn a livelihood. The difficulty in most cases is to curb this natural tendency long enough to make certain of the arrest.

When the arrest is convincingly established the patient's family physician is given an outline of the treatment and care necessary for the continued arrest of the seizures. We ask to be consulted before any change in treatment, such as the gradual reduction in the dosage of luminal. The patient is also given a detailed outline of treatment, diet, and hygienic measures. He is then allowed out on probation, reporting his progress once a month until discharged, then once every six months. This has been a very useful method in following up results. Co-operation in this regard has been particularly satisfactory.

The following charts and case reports typify the results in our experience in the treatment of epilepsy at Woodstock.

CASE 1

(Reg. No. 530), A C, female, aged 52, admitted August 9, 1917.

Hereditary taint nil. Fits at teething period nil. Normal child. Injury at 10 years (kicked on the back of the head by a horse). Onset at 13 years, puberty. On admission grand-mal attacks about once monthly, mentality good. Treatment Luminal, grains $1\frac{1}{2}$, begun August 24th, 1925. Result Seizures arrested since March 25, 1926, mentality normal, no by-effects, about to be discharged. (See table IV).

CASE 6

(Reg. No. 802), E R, male, aged 11, admitted December 29, 1924.

Hereditary taint nil, father intemperate. Fits at teething slight. Injury Acute poliomyelitis at 4 months, ill a month, badly scalded at 7 years, excessive scarring. Onset at 8 years, while going to school, grand-mal. On admission Having fits nearly every day, spoilt child, dull and below normal mentally. Treatment Attended out-patient clinics at Montreal and Toronto. Was on small doses of luminal at that time. Treatment as below. Results No apparent result from luminal in small doses, increased dosage brought about arrest, no by- or after-effects, mentality cleared, normal boy, played an excellent game of ball. Is now discharged on treatment and is going to school, good progress reports. (See table V).

TABLE V

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
1924												1
1925	15 L $1\frac{1}{2}$	15	15	14	20	14	19	20 L iii + R	3 L iv $\frac{1}{2}$ + R	10 L vi - R	0 L vi - R	0
1926	0	0	0	0	0	0	0	0	0	0	0	0
1927	0	0	0	0	0	0	0	0	0	0	0	0
1928	0	0	0	0	0							

Treatment—January 6, 1925, Luminal grs $1\frac{1}{2}$, q h s, August 24, 1925, Luminal grs 3, q h s, and Soda Biborate and Strontium Bromide t.i.d., October 15, 1925, Luminal grs 3, q h s, and grs $1\frac{1}{2}$ q a m, and Rx, November 1, 1925, Luminal grs 3 b.i.d., Rx discontinued.

TABLE VI

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
1922							0 L $1\frac{1}{2}$	3	2	3	3	3
1923	2	2	2	2	5	4	1	4	4	4	4	2
1924	3	2 L + R	3	3	4	4	1	3 L iii + R	2	3 - R	4	2
1925	3	2	2	5	3	5	3	5	3	2	0	1
1926	7	3	4 L iv $\frac{1}{2}$	0	0	0 L vi	0	0	0	0	0	0
1927	0	0	0	0	0	0	0	0	0	0	0	0
1928	0	0	0	0	0							

Treatment—On admission, Luminal grs $1\frac{1}{2}$, q h s, and bran and laxatives, February 6, 1924, Luminal and Soda Biborate and Strontium Bromide, August 24, 1925, Luminal grs 3, and Soda Biborate and Strontium Bromide, October 1, 1925, Discontinued Soda Biborate mixture, March 24, 1926, luminal grs 3, q h s, grs $1\frac{1}{2}$, q a m, and yeast, May 10, 1926, Luminal grs 3, b.i.d.

CASE 7

(Reg No 729), C M, male, aged 29, admitted July 17, 1922

Hereditary taint nil Fits at teething nil Injury Struck on nose (at 17 years) by broken end of golf club, nose broken, unconscious for a short period Onset at 18 years, during college course, had one seizure, then was free for 14 months, then attacks every 6-8 days, grand-mal, no aura On admission mentality fair, rather dull, was on bromides, seizures, 2-3 per month Treatment As below Complained of mental sluggishness when put on bromide in small doses Luminal was finally used alone, with anti-constipation measures, cold shower on rising May 10, 1926, increased margin of safety Results No by- or after-effects, mentality returned to normal, good general health Built his own radio set while in hospital Discharged June, 1927, excellent progress reports, free of seizures, working outdoors (See Table VI)

CONCLUSIONS

1 A confirmed arrest of epileptic seizures can best be brought about by hospital treatment

2 More arrests of seizures are established by continued luminal therapy in moderate doses (3 to 6 grains daily, [0.2 to 0.4 gram]) than by smaller doses ($\frac{3}{4}$ to $1\frac{1}{2}$ grains daily [0.05 to 0.1 gram])

3 The by- or after-effects are but little more often encountered under the use of luminal in moderate doses than under small doses

4 The dose of luminal in the treatment of the epilepsies is limited only by the dosage that can be reached without producing by- or after-effects

5 The "grand-mal" attacks are more amenable to luminal therapy than the "petit-mal."

6 The cessation of attacks checks the mental deterioration associated with continued attacks

7 Though luminal therapy in small doses is

occasionally accompanied by an increase of epileptic attacks larger dosage often results in an arrest in these cases

8 In the sane epileptic, if the seizures are arrested for a considerable period of time, he is again fit to lead a more or less normal existence

9 As luminal therapy is a palliative rather than a curative measure, it should not supplant attention to general hygienic measures, to improvement in the patient's general physical health, regular habits and other medicinal treatments as indicated, in the endeavour to bring about permanent arrest of the attacks

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Myotonia from Calcium Deficiency—Charles E. Kiely reports the case of a man, aged 26, who complained chiefly of pain in the small of the back and stiffness of the calf muscles. The significant history was that in 1921 while playing basket ball he had been struck in the small of the back by another player's knee, and since had suffered from pain in that region. In November of the same year his shin bones became sore and jumping was particularly painful. In the fall of 1922, spasm of the calf muscles began. This appeared not with the imitation of movement but after severe effort. Other leg muscles became involved, but there has been no involvement of the trunk or arms at any time. Only rest and massage would relieve the spasm. There was no history of any muscular disease in three generations of his family, to his best knowledge. He had had no thyroidectomy or other likely source of injury to the parathyroid. There was no history of spasmodic in childhood. He was obliged to discontinue athletics and dancing. His work involved climbing two hundred steps in one case and

this became almost impossible. May, 19 1927 the blood calcium report was 8.5 mg per hundred cubic centimetres. Blood uric acid, uric dextrose and creatinine were all within normal limits. Electrical reaction showed a polar reversal over the tibial nerve at a single examination but was normal the next day before the beginning of treatment. The contraction to the electric current was rather slower than usual but in no sense tetanic. No attempt was made to induce a wave of myotonia by passing a current from one extremity of the body to the other, as too painful a current is required. The patient was given calcium lactate, 0.325 gm, three times a day. He reported prompt improvement. Electrical reactions were normal. November 14, 1927, he returned complaining of moderate exacerbation of stiffness. He had been taking calcium lactate only twice daily for several weeks. The blood calcium was 13.35. He was advised to increase his calcium to the original dose and did so reporting January 25, 1928, that he was entirely relieved.—*J Am M Ass*, August 11, 1928

SOME COMMON MISTAKES IN THE DIAGNOSIS AND THERAPY OF
DISEASES OF CHILDREN*

BY ALAN BROWN, M B ,

Toronto

"IT is written that there 'abideth faith, hope charity, these three, but the greatest of these is charity' And so in medicine we have diagnosis, which is a matter of faith, prognosis, which is a question of hope, and treatment, which is only too often an affair of charity but the greatest of these is diagnosis For, without accurate diagnosis, it is impossible to forecast the course and outcome of a disease or to treat it satisfactorily Indeed, as someone has truly said, 'the first part of treatment is diagnosis, and the second, diagnosis, and the third, diagnosis' I need make no apology therefore, for directing your attention to some reflections on such an important subject on this occasion" (Hutchison, R, *Brit M J*, 1928, 1, 335)

A review of the records of our hospital reveals the fact that certain diseases are very frequently overlooked by the physician in charge of the patient before his admission to the hospital In the succeeding paragraphs your attention will be directed to these conditions, and the essential points in their diagnosis and treatment will be considered briefly, beginning first with new-born infants

HÆMORRHAGIC DISEASE OF THE NEW-BORN

This disease is characterized by spontaneous hæmorrhage from one or more parts of the body, and is of unknown etiology

The hæmorrhages occur most frequently from the gastro-intestinal tract, as evidenced by bloody stools or vomited blood The blood may be tarry, dark brown, or bright red The next most frequent site of bleeding is the umbilicus In occasional cases the bleeding may be intracranial, or may occur from the nose, conjunctiva, or under the skin The bleeding and clotting time is usually prolonged, though in some instances it may be normal The most frequent time of onset is the third day of life The condition occurs with decreasing frequency, until it is practically never encountered after the

twelfth day Hæmorrhages at this late date are usually the results of general sepsis or syphilis The treatment consists in the immediate transfusion of 15 c c per pound of body weight of whole blood The blood of ungrouped donors should not be used If facilities are not available for transfusion the intramuscular injection of a total of 20 to 40 c c of ungrouped blood may be given at three or four different sites

CYANOSIS IN THE NEW-BORN

Cyanosis in the new-born may result from atelectasis, intracranial hæmorrhage, congenital defect of the heart, or enlarged thymus Atelectasis, which is an incomplete expansion of the lungs, usually occurs in premature or debilitated infants The cyanosis is intermittent Examination of the lungs frequently discloses nothing abnormal, unless the atelectasis occurs in a portion of one lung over which area a diminished air entry can be distinguished The treatment consists in stimulating the infant to cry vigorously at frequent intervals Intracranial hæmorrhage usually results from the tearing of blood vessels in the falx or tentorium In mild cases the only symptoms are slight drowsiness and refusal to nurse properly In the more severe cases there may be convulsions, as well as interference with the pulse and respirations The cyanosis is usually constant The only treatment is repeated lumbar puncture to drain off the blood Congenital heart defects can be recognized on routine examination of the heart Cyanosis, if due to a heart defect, is constant There is no specific treatment Cyanosis due to an enlarged thymus is intermittent

ENLARGED THYMUS

This condition is due to a hypersecretion of an enlarged thymus gland The most frequent symptoms of the condition are, sudden attacks of cyanosis, or pallor, breath-holding spells, convulsions, and slight difficulty in breathing similar to that produced by a mild degree of laryngeal obstruction In new-born infants this difficulty

* Read at the 59th annual meeting of the Canadian Medical Association, Charlottetown, P E.I., June, 1928

in breathing may be so marked in the severe cases that the symptoms resemble asthma. Although retrosternal dullness may be detected at the level of the first and second intercostal spaces, a definite diagnosis can only be made by means of an x-ray plate. In infants with only slight enlargement the shadow will extend just past the lateral borders of the sternum, while in marked cases the shadow will extend many centimetres on each side of the mid-line. At the present time we do not know the exact variations in the size of the gland, but we do know that infants with only a slight enlargement have very mild symptoms if any. We have never seen a severe or fatal case without a marked enlargement of the gland. Care must be taken in the diagnosis of enlarged thymus, as at the present time there is a tendency to consider many unexplained symptoms as due to this disease. The treatment consists in repeated exposure to x-rays, and this, to the best of our knowledge, will absolutely cure the condition.

INANITION FEVER

Inanition fever occurs in new-born infants and is due to a lack of fluid intake at a period when the heat-regulating mechanism is unstable. The objective symptoms are, fever, excessive initial loss of weight, some loss of elasticity of the skin, dry mucous membranes, and frequently an odour of acetone on the breath. The condition usually occurs during the third, fourth or fifth day of life in those cases in which the breast milk supply has not yet been established. The treatment consists in a rectal irrigation of water, and the administration of a suitable artificial feeding, until a sufficient supply of breast milk is available. The temperature will drop in the course of a few hours. Care must be taken not to mistake an infective process for this condition.

PYLORIC STENOSIS

Pyloric stenosis is a marked hypertrophy of the circular muscle fibres of the pylorus, which results in narrowing and sometimes almost complete obliteration of the lumen. The objective symptoms are, projectile vomiting, visible gastric peristalsis, constipation, diminished secretion of urine, and loss of weight. A tumour may be palpated in the right hypochondriac or epigastric regions. To accomplish this, considerable time and care are frequently required. Food or water should be offered to the infant during the procedure to produce relaxation of the abdominal

muscles. About 75 per cent of our cases occurred in male infants. The first symptoms of the disease usually appear during the second, third or fourth week of life. Only 11 per cent of our patients vomited at birth, while the maximum age at onset was seventy days. The treatment consists in immediate operation. This is followed by a simple transfusion. Post-operative treatment consists in raising the foot of the bed until the patient recovers from the anaesthetic. The infant is then turned on the right side and the head raised. Half an ounce of breast milk should be offered four hours after the operation, and the amount increased by a quarter of an ounce every four hours until the caloric requirements are fulfilled.

TETANY

Tetany is caused by a deficiency in the diet of the antirachitic substance, or vitamin D, which results in a reduction of the blood calcium. Convulsions are the predominant symptom. In certain cases they may occur as often as thirty or forty times a day. The next symptom, and one which is almost invariably overlooked, is a peculiar inspiratory crow produced when the child cries. Chvostek's sign, which is a contraction of the facial muscles elicited by tapping the side of the cheek, is almost invariably present in infants with tetany. It is due to a hyper-irritability of the facial muscles. This sign is of no significance in infants over two years of age. A characteristic position of the hand (carpopedal spasm) is present in a moderate percentage of cases. Sometimes this position of the hand may be produced by a constriction of the arm for one or two minutes, and when the spasm is produced in this manner it is called Trousseau's sign. The before-mentioned five symptoms of tetany, namely, convulsions, laryngospasm, Chvostek's sign, carpopedal spasm, and Trousseau's sign are all due to hyper-irritability of the neuro-muscular system.

The age incidence and seasonal incidence of tetany are singularly striking. Of the cases encountered in the hospital during the past five years 80 per cent occurred at the fifth, sixth, seventh, eighth and ninth months of age, and 85 per cent occurred in the months of January to May inclusive, the highest incidence being in March and April.

In regard to treatment the convulsions may be controlled by the administration of 15 to 25 c c of a sterile 8 per cent solution of magnesium

sulphate injected subcutaneously. As the convulsions are a result of the low calcium content of the blood, calcium chloride should be given. The amount should be 15 grains four or five times a day for the first two days, then the number of doses should be reduced to three a day. This should be continued for three weeks. The calcium chloride may be dissolved in a little water and placed in the feedings. Cod liver oil should be started, 1 drachm t.i.d., and continued for a long period. If possible the infants should be exposed to the direct rays of the sun.

SCURVY

Scurvy is caused by a deficiency in the diet of the anti-scorbutic substance called vitamin C. The symptoms of scurvy are pain on being handled, bleeding and swelling of the gums around the teeth, blood in the urine or stools, and swelling at the ends of the long bones. The swelling is due to a hæmorrhage under the periosteum. This at first glance may appear as a swelling of the joint which often leads to the mistaken diagnosis of arthritis of rheumatic origin. Enlargement of the costo-chondral junctions is also present, but this enlargement is more angular than that found in rickets. Seventy-five per cent of the cases encountered in this hospital occurred in infants from 8 to 12 months of age. It is rarely seen in those more than one and a half years of age, which is of considerable value in the differential diagnosis of scurvy and rheumatic arthritis as the latter condition is practically unknown under three years of age. The treatment consists in the prolonged administration of one half to one ounce of orange juice twice a day. This may be added drop by drop to the cold feeding. If diarrhoea is produced, twice the amount of canned tomato juice may be used. Every infant more than five months old should receive at least two drachms of orange juice a day as a prophylactic measure.

INTUSSUSCEPTION

Intussusception is an invagination of the bowel within itself. It usually starts at the ileo-cæcal valve. The outstanding symptom is sudden onset of pain in a previously healthy infant. The parent can generally remember the exact time of the onset of the symptoms. Vomiting begins, and, usually after the passage of one normal stool, the typical red currant jelly stool appears. This consists of mucus and blood. Rarely the stool may consist almost entirely of mucus with

only a little blood. Examination of the relaxed abdomen reveals a sausage-shaped tumour, usually lying transversely across the upper part. It is frequently necessary to give a little anæsthetic to produce relaxation. Rectal examination will disclose the typical stool, and if the condition has been present long enough the head of the intussusception may be felt. In a few hours shock-like symptoms appear, due to the absorption of toxins from the obstructed bowel. Sixty-five per cent of cases occur in infants from four to ten months old and only an occasional case in children over eighteen months of age. The treatment consists in the immediate reduction of the tumour by an abdominal operation. A delay of a few hours may be fatal. The prognosis depends upon the man who first sees the case.

ACUTE INTESTINAL INTOXICATION

Acute intestinal intoxication is a shock-like condition which results from the absorption of toxins from the gastro-intestinal tract. The toxin is probably of a split-protein nature. The intoxication is practically always preceded by diarrhoea. The outstanding symptom is progressive drowsiness, accompanied by vomiting. Pallor or cyanosis may result from the effect of the toxin on the circulation. The liver is usually enlarged. The treatment consists in the withdrawal of all food, and the oral, intravenous, and subcutaneous administration of glucose until the drowsiness has been absent for one or two days. Gradually increasing quantities of two per cent lactic acid milk may then be offered. If the drowsiness is marked a transfusion of blood is indicated. In very severe cases an exsanguination-transfusion is a life-saving procedure. The mortality even with the best of treatment is very high.

MONGOLIAN IDIOCY AND CRETINISM

These conditions of defective mental development are frequently not differentiated by the family physician. The vast majority of Mongolian idiots are referred with a diagnosis of cretinism. A survey of the records of this hospital show that Mongolian idiots are encountered more frequently, as during the past five years forty-three Mongolian idiots were admitted and only twelve cretins. The facies of the Mongolian idiot is quite characteristic. The eyes are almond-shaped, and slant downwards and inwards. The epicanthic fold is marked. These

characteristics become more evident when the child cries. The tongue usually protrudes, and only in this respect does the appearance of the Mongolian idiot resemble the cretin. In a number of cases the external ear is crinkled, due to maldevelopment of the cartilage. Congenital defect of the heart or palate is frequently present. The head tends to be flattened from before backwards. The hands are short and stubby, and the little finger is frequently curved inwards ("baseball finger"). Hypotonicity of the body is marked and the feet can readily be placed behind the head. These infants are subject to frequent head-colds, and usually die of a bronchopneumonia during the first two years of life. No treatment improves the condition.

Cretinism is the result of a congenital deficiency or absence of the thyroid secretion. The features are coarse. The skin is dry and doughy but does not pit on pressure. The nose is broad, the lips thick, and the jaw heavy. The tongue is large and protuberant. The whole face presents the appearance of having been pushed back, with the force applied at the bridge of the nose. The hair is coarse and wiry. The extremities are short. The temperature tends to be subnormal.

The administration of thyroid extract produces a marked improvement in from one to two months. This treatment has to be continued throughout life. The dosage at first is usually about one half a grain three times a day, which is not increased as long as the patient shows physical and mental improvement. If necessary as much as 10 to 15 grains may be given daily.

Evidences of over-dosage are, increased perspiration, pallor, prostration, and an abnormally high pulse rate. Although the physical development may become normal these patients are always mentally backward.

HEART MURMURS

Heart murmurs may be divided into three groups, congenital, functional, and acquired. The congenital heart murmur is present from birth. It is loudest over the base or body of the heart, and the intensity varies from the very faintest sound to the loud "machinery" type of murmur. The intensity of the murmur bears no relation to the severity of the lesion. Enlargement of the heart takes place to the right. Functional murmurs also occur over the body of the heart and are not transmitted. Although the exact cause is not known they are usually considered to be the result of changes in the

blood due to anæmia, or to dilatation of the heart as the result of some febrile condition. They are always of a very soft blowing systolic character and frequently disappear on exercise. Indeed, they tend to disappear spontaneously. Examinations over a long period may be necessary in order to make a definite diagnosis. Acquired heart murmurs differ considerably from the above mentioned conditions. A point of very great practical value in the differential diagnosis is that acquired heart disease is quite rare under four years of age. The character of the acquired heart murmur in children is the same as in adults. The murmurs most frequently encountered are systolic in time, heard best at the apex, and transmitted towards the axilla. Enlargement of the heart is toward the left. A history of sore throat, rheumatism, or chorea is usually obtained.

OTITIS MEDIA

Inflammation of the middle ear is a condition which is frequently overlooked. During the past five years no less than 2,094 cases were encountered in the medical service of this hospital. The frequency of this condition in infancy is due to the prevalence of upper respiratory infection, in conjunction with the short straight Eustachian tube of infancy which allows easy access of the infecting organism to the middle ear. The presence of otitis media should always be considered in any infant with an unexplained fever, as this may be the only symptom. Usually however the infant is irritable. As a result of the infection a gastrointestinal disturbance may develop. The infant practically never indicates the presence of pain in the ears. If the resistance of the patient is low, there may be little or no elevation of temperature. Otitis media is invariably secondary to a nasopharyngitis. Accordingly, the ears should always be watched carefully in any upper respiratory infection. Examination is most readily made by means of an electric auriscope. If the drum is reddened the condition may be treated by the administration of 1 to 2 drops of warm Keith's dressing in the ear every 4 hours. If bulging occurs, paracentesis is indicated, followed by dry wiping or syringing.

PYELITIS

Pyelitis is an infection of the pelvis of the kidney, which in severe cases extends into the kidney substance itself, producing a pyelonephritis. The symptoms are, a high widely fluctuating

temperature with a sudden onset, frequently preceded by a chill, and occasionally a convulsion. There are frequency of micturition and loss of appetite. A history of frequency is difficult to obtain in infancy. In severe cases the patient becomes quite toxic. The physical signs are usually negative, but occasionally large tender kidneys may be palpated. A definite diagnosis can only be made by a microscopical examination of an uncentrifuged specimen of urine. The urine may be collected in the male by strapping an ordinary test tube on the penis. With the female a female infant urinal, or an ordinary glass bird-seed container may be held against the vulva by the diaper. Examination of the urine shows the presence of a large number of pus cells. Occasionally, due to the blocking of a ureter, the pus cells appear intermittently. Therefore, it may be necessary to examine two or three specimens, before the pus is found.

The age and sex incidence of the disease is of interest. Eighty per cent of the cases encountered at this hospital occurred in females, and more than 50 per cent of the cases were infants from three to eighteen months of age. The disease is uncommon under three months. The treatment consists in the administration of sufficient potassium citrate to make the urine alkaline. This may require from 40 to 300 grains per day. The average case requires 15 grains to 25 grains dissolved in 2 drachms of water, and administered 5 times per day, at an interval of 4 hours. The urine must be kept alkaline for a period of about one year, otherwise the disease will recur.

AMMONIACAL DIAPER

The chief symptom of this condition is the presence of free ammonia in the wet diaper. Frequently, the ammonia is so strong that it "makes the eyes water" when the diapers are being changed. As a result of the local irritation produced by the ammonia there may be excoriation of the buttocks and genitalia, indeed, in many cases the infant is brought to the physician on this account. The condition is due to decomposition of the urea and ammonium salts in the urine with the resultant liberation of ammonia. The whole process takes place in the diaper after the urine is passed. Different theories have been advanced to explain this condition. Some authors believe it is due to the presence of certain bacteria in the diaper which act rapidly on the urea and the ammonium salts with the liberation of ammonia. Other writers consider

the ammonia the result of the action of traces strong soap left in the diapers. The question is not settled at the present time.

The treatment is very simple. One-third of a teaspoonful of baking soda (sodium bicarbonate) is given daily in each of three feedings. This results in the replacement of some of the ammonium salts in the urine by sodium salts. The amount of fat in the milk should be reduced, as this diminishes the amount of acids excreted in the urine. These acids frequently require ammonia to neutralize them. The diapers after being washed should be soaked for an hour or two in a saturated solution of boracic acid. They should then be thoroughly rinsed before use. This both sterilizes the diapers and removes any trace of soap. If these measures are carried out the odour of ammonia almost invariably disappears. The excoriated areas on the skin should be washed with olive oil, and then covered with cornstarch. Exposure of the parts to the air facilitates healing.

RETROPHARYNGEAL ABSCESS

This disease, which is not uncommon, is almost invariably overlooked, in spite of the fact that it can be readily diagnosed. During the past year 11 cases were admitted to this hospital, practically all of which occurred during the winter months. It is usually encountered in children less than two years of age. The condition is an acute inflammation of the retropharyngeal glands, which are situated on both sides of the midline posterior to the pharynx. It is always secondary to a nasopharyngitis. The prominent symptoms are noisy, snoring respirations with the mouth open, and retraction of the head. These symptoms are due to pressure on the larynx. An external swelling below the angle of the jaw is almost invariably present. The disease can only be diagnosed with certainty by palpation with the finger in the mouth. If no teeth are present a gag is unnecessary. A circumscribed mass can be felt on the posterior pharyngeal wall just lateral to the midline. Some cases of retropharyngeal adenitis do not go on to abscess formation. When definite fluctuation is present, the mass should be incised. The use of either an anæsthetic or an external incision is positively contraindicated. The patient, pinned in a blanket, is laid on the back with the head extending over the edge of the table. A mouth gag is inserted. It is essential that the knife used be wrapped with adhesive

so that only the terminal eighth of an inch of the blade is left unguarded to penetrate the tissues. Guided by the left index finger, a transverse incision is made across the most fluctuant portion of the mass. The knife is withdrawn and the index finger rapidly inserted in the opening and any adhesions broken down. The child is immediately turned on its face to allow escape of the pus. The procedure as outlined must be carried out rapidly, in order to prevent the aspiration of pus. Convalescence is rapid.

EXANTHEM SUBITUM OR ROSEOLA INFANTUM

This disease occurs usually in infants less than eighteen months of age. The onset is abrupt, beginning with a high fever of a fluctuating nature which persists three to four days. Usually on the fourth day, the temperature falls by crisis, and there appears a pink maculo-papular rash which persists for one to three days. As the rash fades there frequently appears a fine branny desquamation. The disease is contagious and there is complete absence of complications or sequelæ.

Exanthem subitum occurs most frequently in the late summer and early autumn, and during the winter months. The fever ranges from 101° to 105°, with a tendency to morning remissions.

The patient, in spite of the high fever, is usually carefree and happy which is of considerable diagnostic importance. The catarrhal symptoms of measles are absent. There may be slight congestion of the throat, conjunctiva, and buccal mucous membranes. Usually on the second or third day of the febrile period there occurs a general glandular enlargement, though often only the cervical and posterior auricular glands are involved. In many cases the enlargement of these glands persists for weeks. On the third to fifth day of the disease the fever falls by crisis, and usually coincident with this the rash appears, at first on the trunk, then spreading to the neck, face, posterior auricular regions, and the proximal half of the extremities. It is a bright pink or rose coloured maculo-papular rash. The maculo-papules in some cases coalesce, which may make the rash almost indistinguishable from that of measles. The spots disappear on pressure. After one to three days, the rash fades, frequently leaving a fine branny desquamation. A characteristic blood change is the presence of a leucopenia, with 70 to 85 per cent of lymphocytes.

There is no other exanthem in which the eruption is consistently coincident with defervescence, and with the disappearance of all signs of illness.

SPONTANEOUS CEREBRAL HÆMORRHAGE*

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THAT the title of this paper may possess the flavour of the uninteresting and commonplace is freely admitted. That many of us here to-day may entertain the idea that in the study of brain hæmorrhage little remains to stimulate our imagination or arouse our interest is further admitted. And yet it is only within the last very few years that spontaneous cerebral hæmorrhage has attracted anything like the attention that it deserves. Because of this awakening interest, and the mental ataxia which attended my own earlier recognition of the condition, I have ventured to bring it up for our consideration.

I trust that I am casting no undue aspersion upon our profession when I suggest that the term itself awakens only but one very definite mental picture in the mind of the average physician. He conjures up the figure of an oldish person, with well-advanced arteriosclerosis, lying in a comatose or semi-comatose state, completely hemiplegic, and awaiting only the final flicker of the flame of life.

It is not, however, of this clear-cut picture of intra-cerebral hæmorrhage, which I am sure we all recognize at a glance, that I propose to speak. Rather do I wish to attract your attention to a vast series of sudden hæmorrhagic disorders, occurring in or upon the brain, at all ages, and under unrecognized pathological conditions. If,

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on the one hand, we eliminate from our consideration definitely intracerebral hæmorrhage due to vascular disease, and, on the other, such clear cut and well-recognized conditions as subdural hæmorrhage of traumatic origin, we still encounter a miscellany of hæmorrhagic conditions none the less numerous and vastly more interesting.

First in importance among these should be placed subarachnoid hæmorrhage, a term recently added to our nomenclature to denote sudden spontaneous hæmorrhage between the arachnoid and the brain surface. The onset is characteristic, probably more so than in any other type of cerebral hæmorrhage. The patient, while in the full enjoyment of his usual good health, is suddenly stunned. He has the sensation of being struck on the head as if from behind. Intense headache supervenes, and he rapidly but steadily passes into unconsciousness. Gradually the breathing becomes stertorous, the pulse slowed, and the pupils dilated, indicating the gradual development of cerebral compression. In contradistinction, however, to intracerebral hæmorrhage, we find few, if any, localizing signs. Rather is there a general paresis with bilateral manifestations. In the severer types, the patient is quite unconscious, breathing is stertorous, the pulse slowed, the pupils dilated, sometimes unequal and occasionally inactive to light. Muscular tone is at first increased, but gradually, in the course of a few hours, passes through hypotonia to complete flaccidity. Reflex activity is increased throughout and accompanied by such pathological reflexes as the Babinski, Oppenheim, or Chaddock phenomena, ankle or patellar clonus, and even absence of the abdominal reflexes. Commonly, these pathological signs are equally manifest on both sides, though occasionally they evidence a preponderance of pressure on one or other side. Never, however, does one see complete hemiplegia, as in intracerebral hæmorrhage.

A quite different picture may be observed in the less severe cases. Often one sees here evidence of meningeal or cranial nerve irritation, accompanied by restlessness, irritability and mental confusion rather than the well-marked coma of the more severe cases. Cervical pain, with retraction of the head and a more or less well-marked Kernig sign, further complicate the picture, and are frequently re-

sponsible for the diagnosis of meningitis, until the spinal fluid examination renders this diagnosis untenable. In both types, however, the onset is similar. A sudden attack of pain, as if something had snapped in the head, and gradually developing weakness characterize both. The diagnosis of subarachnoid hæmorrhage, while inferred from the clinical history and findings, must depend, finally, upon the examination of the spinal fluid.

A not uncommon clinical finding in these cases is that of massive albuminuria, or glycosuria, which naturally enough suggests to the physician's attention either uræmia, in the first case, or diabetic coma in the second. The hæmorrhage in these cases is essentially irritative and, as might be expected, settles on or about those basal structures irritation of which is known to set up glycosuria or albuminuria. The transitory nature of these findings, the blood chemistry and, finally, the spinal fluid findings, suffice to eliminate the possibility of either condition in the genesis of coma of this type. While the level of nitrogen retention is frequently raised above normal, it is never comparable to that of true uræmia.

Whether, however, one is dealing with the severe comatose type or the irritative meningeal type, the diagnosis must ultimately rest upon the examination of the spinal fluid. This examination should not be undertaken without first noting the actual pressure in the spinal canal, for which the use of the manometer is essential. So high is the pressure reading in most of these cases that the ordinary mercury manometer is quite inadequate. Normally, this apparatus registers from 8 to 12 mm of Hg, while under pathological conditions the readings may be as high as 60 mm. In the cases under discussion, the readings ranged from 25 mm to 55 mm, all being materially elevated but, as would be expected, registering the higher levels in the severe comatose type of case. Just one word in passing on the commonly employed practice of estimating spinal pressure by the drop method. Fundamentally, it is unsound and, practically, it is misleading and worse than useless.

In the first few days, blood is always present and is uniformly distributed throughout the fluid. It does not clot after standing, as may be the case if due to needle trauma. After the

first few days, the blood tends to disappear, but continues to disclose itself in the appearance of xanthochromia, the yellowish fluid which indicates a previous hæmorrhage. The rapidity of this disappearance of blood cells is rather remarkable, and the passage from frank blood to xanthochromatic fluid is marked by certain cytological phases which, if not understood, may be responsible for serious diagnostic error. Following the fragmentation and final dissolution of the red corpuscles, leucocytes and lymphocytes appear in great numbers, constituting, no doubt, the phagocytic agents by which this dissolution is brought about. This leucocytic phase, if unappreciated, tends to confuse the picture and presents further confirmation of the diagnosis of meningitis.

The spinal fluid, then, presents various consecutive phases which, if properly understood, establish unassailable evidence of hæmorrhage. The successive stages of uniformly blood-stained fluid under pressure giving place to xanthochromia, of leucocytic passing to lymphocytic invasion, and, finally, to clear fluid, give us our *sine qua non* of subarachnoid hæmorrhage.

The first type of case may be illustrated with the following histories.

CASE 1

F. C., 52 years old, a heavily built, plethoric engineer, was admitted to the Montreal General Hospital in September, 1927, a few hours after a sudden attack of pain in the head. He believed he was struck on the head with a hammer. His past history was uneventful always a hard worker, smoked moderately, took an occasional drink, denied venereal disease. In the course of one hour he became fully unconscious, and five hours later was examined in the ward. His breathing was stertorous, pulse 68-70, temperature $101\frac{1}{4}^{\circ}$ F. The general muscular condition was one of hypotonia, with intermittent, spasmodic contractions of the right arm, no localized paresis. The pupils were dilated, regular, sluggishly reactive to light. The eyes were fixed in mid position. The eye grounds were normal.

All the deep reflexes were hyperactive and intensified on the left side. Bilateral Babinski and Chaddock phenomena were noted, and there was a well sustained ankle clonus on the left side. Abdominal reflexes were doubtfully present. Tendon jerks of the upper extremities were present throughout, but intensified on the left side. A crude sensation to pain was noted to be present on both sides, inasmuch as there was with drawal response to prick. Kernig's sign was not elicited.

Spinal Fluid—Pressure with the mercury manometer was 38 mm (normal 8-10), the fluid was uniformly blood stained, but showed no clot on standing. The Wassermann test was negative.

Blood—Red blood cells, 490,000 per c.mm. No abnormal red cells were seen, hæmoglobin 85 per cent (Dare), white blood cells, 12,400. The relative proportion of white cell elements were maintained. Urea

nitrogen was 17 mgm. per 100 c.c. The Wassermann test was negative.

Urine was clear, sp. gr. 1018, reaction, acid, albumin ++, sugar + (Fehling's), no casts or red cells.

X-ray examination of skull revealed no abnormality. Cardiovascular System was normal, blood pressure, 138/85.

The spinal pressure was gradually reduced daily until 14 mm. Hg was registered, and in the course of eight days the patient passed from the unconscious state to one of delirium and disorientation for place and time, from this to mild confusion and, ultimately to his normal mental state. Along with this general improvement, his normal muscular tone became re-established and all reflex activity took on its normal expression. At the end of the fourth day, the temperature curve became normal and remained so. Six days following the initial puncture no red cells could be found in the spinal fluid, but numbers of leucocytes and lymphocytes were in evidence, while a distinct yellowish colour preceded the clear fluid observed during his last days in the hospital. All evidence of albuminuria disappeared four days after admission. Two weeks after discharge, or eight weeks after the initial hæmorrhage, he resumed work as engineer on a fast passenger train and has remained on full duty since.

CASE 2

The second case is that of a woman, aged 35, whom I saw in consultation with Dr. Ilhevitz, and was kindly permitted to follow throughout her illness.

Suddenly, on the morning of March 20, 1927, while talking to her family, she was taken with severe pain in the right side of her head. She clapped her hand to her right forehead and clutched at her hair, gradually sinking into semi-unconsciousness, in which state she was admitted to the hospital, two hours after onset of pain. During this period, she vomited several times and spasmodic contractions of the left arm and forearm were noted. Her past history revealed nothing of significance.

On admission, she was obviously in pain, tearing her hair, clutching at her head and making such an uproar that hysteria was suggested by one physician who saw her. The temperature was 100.2° , pulse, 62, respirations, 20. She remained conscious throughout her illness, though for several hours she was stuporose and confused, being aroused to the conscious state with considerable difficulty. The pupils were dilated and unequal, the right being the larger, and both reacted to light sluggishly, no nystagmus, no ocular paresis. The eye grounds were normal on admission, but, three days later, showed moderate bilateral papilloedema, and in the periphery of the left retina numerous petechial hæmorrhages in the superficial layers (Dr. Rosenbaum). Ten days later, the swelling and hæmorrhage had disappeared, and a left-sided homonymous hemianopsia was discovered. No paresis of the face, arms or legs could be made out, but muscle tone was definitely increased on both sides and particularly so in the left arm and leg. Infrequent spasmodic contractions of the left arm continued for several days. Sensation of all forms showed no demonstrable impairment. All tendon jerks were exaggerated, the knee and ankle jerks on the left side being definitely hyperactive. Both plantars were extensor in type, and there was a well sustained ankle clonus on the left. The abdominals could not be elicited. Kernig's sign was present on both sides, and there was well marked retraction of the head.

Spinal Fluid—The spinal fluid was uniformly blood stained, did not clot on standing and was under a pressure of 35 mm Hg. This was daily reduced by repeated lumbar punctures until 12-15 mm Hg was recorded. The centrifugized specimen showed a faint, yellowish tinge to the supernatant fluid which, as the red cells disappeared, gradually deepened to a definitely xanthochromasia. Leucocytes and lymphocytes were

abundantly present after the sixth day. On discharge, May 2nd, the spinal fluid was normal, with the exception of a persistent positive Pandy reaction for globulin. Wassermann reaction in blood and spinal fluid was negative.

Blood Chemistry—The blood sugar was 0.186 per cent, creatinine, 1.2 mgm per 100 c.c.

Urine—Clear, sp. gr. 1022, acid, albumen +, sugar, qualitatively present to Fehling's test. Both sugar and albumen disappeared from the urine before she left the hospital. The cardiovascular system was normal, blood pressure 120/85.

This patient made a complete recovery, and resumed her household duties five weeks after the onset of her illness. Clinically, the earlier findings in this case closely simulated meningitis. The severe headache, the slight temperature curve, the head retraction, and the Kernig sign were given their proper significance only after the spinal fluid findings were revealed.

These two cases have been selected from five of a similar nature, as clinical illustrations of that very definite entity amongst brain hæmorrhages in general, spontaneous subarachnoid hæmorrhage.

DISCUSSION

Anatomically, bleeding into the subarachnoid space may occur in one of several ways: (1) directly from one of the larger vessels lying in the space itself, (2) from extension of an intracerebral hæmorrhage, either into the subarachnoid space itself or, if more deeply placed, into one of the ventricles, (3) as a result of trauma, in which case both subdural and subarachnoid spaces may be inundated. By the term spontaneous subarachnoid hæmorrhage we refer only to those cases which are included in the first type.

I am convinced that many of the cases of type 2 are etiologically and pathologically identical with those of type 1, but inasmuch as they are marked by evidence of brain tissue destruction, from which complete recovery seldom if ever takes place, most authorities on this subject exclude them from the picture of spontaneous subarachnoid hæmorrhage. Later, however, some interesting examples of this class will be referred to. Obviously, type 3 cases of traumatic origin, have no place in this discussion.

Most cases of spontaneous subarachnoid hæmorrhage may be classed under one or other of two groups, which, after all, merely represent degrees of severity in the same clinical process. In those cases of lesser severity, as illustrated in Case 2, the predominant feature is one of meningeal irritation. The initial headache persists, and is followed by head retraction and the

Kernig phenomenon. There is partial retention of consciousness throughout or, at most, only a temporary loss of consciousness, associated with the initial shock. The mental state is often one of confusion and disorientation, while Korsakoff's syndrome has been reported by some authors. The severer cases, on the other hand, present, rather, the picture of cerebral compression, with early developing and persistent coma, dystonia and increased reflex activity. These constitute the apoplectic type, and, indeed, the differentiation from intracerebral hæmorrhage is not always easy. It may be only after recovery has taken place that the absence of evidence of brain tissue destruction, with complete disappearance of all signs, establishes the differential diagnosis.

Between these two extremes lie cases of varying degrees of severity, exhibiting features of one or other type or, as may be the case, of both. Not infrequently, the apoplectic type assumes the meningeal syndrome during the process of recovery. Common to both types are those characteristic features upon which one must rely for diagnosis of the condition: (1) the sudden onset, often in apparently healthy individuals, with severe pain and the sensation of "something having snapped in the head", (2) the rapid development of signs of cerebral compression or meningeal irritation, according to the severity of the rupture and rapidity of the bleeding, (3) usually a mild elevation of temperature with a moderate slowed pulse, (4) the development in some cases of papilloedema and hæmorrhagic retinitis, (5) the development, in some cases, of glycosuria and massive albuminuria, (6) finally, and essentially, the characteristic spinal fluid findings.

DIFFERENTIAL DIAGNOSIS

In recent years, the great clearing house of neuropsychiatric difficulties in diagnosis has been encephalitis lethargica, and it is not in the least surprising that many of these sudden hæmorrhagic disasters should have been placed in this category. The somnolence, with signs of meningeal irritation, and the mild elevation of temperature, frequently indicate inflammatory disease with encephalitis lethargica or meningitis in the foreground. Both these diseases, however, are readily excluded by the examination of the spinal fluid. The not infrequent finding

of sugar or albumen in large quantities in the urine may direct the physician's attention to diabetic coma or uræmia but here again the state of the spinal fluid and the estimation of nitrogen retention in the blood suffice to throw these two conditions out of court.

More difficult of interpretation are those cases in which the blood in the subarachnoid space has arisen from the rupture of an intracerebral hæmorrhage, either directly into the subarachnoid space or indirectly by way of the ventricles. It may be quite impossible in some cases to satisfy oneself that these possibilities are excluded, but the presence of evidence of brain tissue destruction, such as a frank hemiplegia or aphasia point to the cortex or sub-cortex as the site of the primary rupture.

The onset, course and termination of some of these intracerebral hæmorrhages are so similar to those under discussion that there appears little justification for their exclusion from the clinical picture of spontaneous subarachnoid hæmorrhage. In the present state of our knowledge—or rather, lack of knowledge—of the pathology of spontaneous hæmorrhage in young and apparently healthy persons, it would appear that the question of type—intracerebral or extracerebral—is an accidental one depending upon the site of the initial lesion. In elucidation of my contention in this matter, I will outline two cases which but for the site of the initial ictus must have been readily classed as cases of spontaneous subarachnoid hæmorrhage.

CASE 3

A healthy boy, of 13 years, seen in consultation with Dr Harry Shaw. His previous history was devoid of any untoward happening and he was regarded as exemplary physically, mentally and morally. Shortly after going to bed on November 1, 1926 he was suddenly seized with intense headache vomited several times and quickly passed into coma. This coma wore off and when seen in the early morning he was conscious—suffering pain intensely irritable and throwing himself about the bed. The pulse was 48, temperature 99.2° respirations 24. Pupils were equal regular and showed a normal reaction to light. The fundi of both eyes showed no apparent abnormality, no nystagmus. No ocular, facial or limb paresis. The neck muscles were rigid, with well marked retraction of the head and there was a strongly positive Kernig's sign on both sides. The deep reflexes could not be elicited and the plantars were normally flexor in type. The abdominals were present and equal on both sides.

The impression was that the case was one of cerebro spinal meningitis.

Spinal Fluid—This was under pressure of 25 mm Hg, and was deeply and uniformly blood stained. The supernatant fluid showed a definite yellowish tinge, which gradually deepened from day to day into xanthochromia. An increase in the white cell elements

was noted on the first examination and later the lymphocytic variety especially became very numerous, as the red cells tended to disappear. Cultures of the fluid remained sterile.

Rapid and satisfactory recovery was made from this initial hæmorrhage so that by November 16th he was apparently quite well. No pain or headache, no objective signs of cerebro-spinal injury. The spinal fluid contained no red cells but was markedly xanthochromic. He was eating, sleeping and acting normally.

On November 18th he was again seized with headache vomiting and in a very few minutes coma. There was violent symmetrical twitching of the right arm and leg while the left arm and leg were in a state of flaccid paresis. The head was held rigidly towards the left and the eyes turned towards the right. The pupils were equal dilated and reacted to light. Deep reflexes were exaggerated but equal. Bilateral Babinski and Chaddock phenomena were present with bilateral ankle clonus. Abdominals were absent on both sides.

Examination by Dr MacMillan showed bilateral hæmorrhagic retinitis with many small hæmorrhages into the periphery of both retinæ suggestive sweating of the temporal side of right disk. There was paresis of the external rectus on the left side.

Spinal Fluid showed pressure 30 mm Hg and was deeply blood stained. No clot on standing.

Again improvement set in and once more he returned to normal activity. During this phase of normality Dr Waugh made a complete examination of his blood which he summarized as follows: 'There is nothing in the blood picture to suggest blood disease as the cause of the cerebral condition. No hæmorrhagic diathesis. The pathological features are the high viscosity and concentration of the blood producing anhydramia. This is probably due to fluid depletion. The relatively high bilirubin content speaks against any extensive hæmorrhagic extravasation.'

On November 28th the spinal fluid was deeply coloured with a high white cell count. On November 30th he had a sudden seizure for the third time with headache coma and flaccid paralysis on both sides and with bilateral Babinski and ankle clonus and absent abdominal reflexes.

After lumbar puncture which again showed bloody fluid, he regained consciousness for several hours but gradually sank back into unconsciousness with a pulse of 34 and Cheyne Stokes respiration. He died on December 2nd.

Autopsy Findings—The brain only was examined. Dr Conner reported as follows: The brain is large. The convolutions are flattened and the whole is covered with recent blood. A mass of blood has broken through the anterior part of the left lateral ventricle. On section a large hæmorrhage is present in the cortex of the left hemisphere. All the ventricles are filled with blood as far back as and excluding the 4th ventricle. The original hæmorrhage appears to have been in the cortex outside the ventricle and to have broken through to the subarachnoid space and into the left lateral ventricle. After washing away the blood an exhaustive examination of the vessels failed to reveal the presence of aneurysm or rupture in the wall of one of the larger vessels.

'Numerous sections from various portions of the brain were examined microscopically. These in general show cerebral cortex or portions of basal ganglia with hæmorrhage. In no section is there any line of demarcation between hæmorrhage and brain substance. The immediately surrounding tissue is made up of degenerating nerve and glial cells in which there are many phagocytic cells containing blood pigment. There is a condensation of neuroglial cells in places but there is no evidence here of a neuroglial tumour. No mitotic figures are found, no separation from the more normal tissue can be demonstrated and the contiguous

blood vessels do not show the endothelial proliferation common in the vicinity of neuroglial tumours

"The few nerve cells observed are somewhat swollen and show with phosphotungstic acid hæmatoxylin stain a few Nièl granules indicative of degeneration. There seem to be more satellite cells around them than usual. The hæmorrhage, in bulk, is rather recent, but evidence of old hæmorrhage is present in the numerous pigmented endothelial cells around the blood. In this area, in addition to the pigmented cells, there are many large, swollen, vacuolated cells, commonly known as *gitterzellen*.

"No defect of blood vessels can be found. Those large enough to have muscular and elastic tissue walls show no change from the normal. The smaller ones are dilated in the region of the hæmorrhage, but an actual rupture cannot be demonstrated."

CASE 4

A young man, 31 years old, whose health was always excellent. There was no record of any previous disease or ill health and, with the exception of strong addiction to alcohol, his past history was free from comment.

On December 7, 1927, he was admitted to the Montreal General Hospital unconscious and hemiplegic, with the report that he had been perfectly well when he had retired at 11 o'clock the previous night. In the morning, his wife found him in an unconscious state and unable to move his right arm or leg. On admission he was deeply somnolent, but could be aroused to apparent consciousness. He could not speak, however, and gave little sign of recognition of his surroundings. The temperature was 100.3°, pulse, 60-64, respirations, 18-20. The pupils were equal, small, slightly irregular, and did not respond to light. There was complete right-sided hemiplegia involving face (lower), arm, and leg. He could mumble a few, indistinct and unrecognizable sounds. The eye fundi were normal on admission. All deep tendon reflexes were greatly exaggerated on the right side, while positive Babinski, Chaddock, Oppenheim, and Hoffman reflexes were obtained on the right side. Ankle clonus and absence of the abdominal reflexes were noted on the right side. All reflex activity on the left side was normal. The cardiovascular system was normal. The blood pressure was 140/100, on discharge, 120/80. The radial arteries were soft and easily compressible.

Urine—Acid, sp. gr. 1022, albumin + + +, sugar, negative to Fehling's, no casts or red blood cells were seen.

Spinal Fluid—Pressure, 50 mm Hg. The fluid was deeply and uniformly bloody. The pressure was gradually reduced to 25 mm Hg, with marked improvement in his mental state. Repeated daily lumbar punctures, over a period of ten days, reduced the pressure to 15 mm Hg.

The spinal fluid in this case was typically that of subarachnoid hæmorrhage, and passed through the stages of red cell absorption, xanthochromia, leucocytic and lymphocytic invasion to clear fluid with excess of globulin.

Ten days after admission, the optic discs began to show blurring with venous congestion, and on February 3rd Dr. Mathewson reported "Definite optic neuritis in both eyes with a few superficial retinal hæmorrhages."

Before discharge on March 1st, all signs of diseased fundi had disappeared. The blood and spinal fluid Wassermann tests were, on several occasions, negative. A mild luetic curve in the colloidal gold was accounted for by the presence of blood pigments. The nitrogen retention and blood sugar curves were found to be within normal limits.

After reduction of the spinal pressure to lower limits consistent with life, his mental confusion and somnolence completely cleared up and definite improvement took place in his speech. While still showing defect in the receptive speech mechanism, emissive

speech was almost normal. The hemiplegia disappeared, so far as movement indicated, but evidence of pyramidal tract involvement on the right side was still present in the persistence of the Babinski, Chaddock, and Oppenheim phenomena, and the absence of the abdominals on the right side. In addition, a decided limp and hyper-tonia of the right arm marked the irreparable damage to the pyramidal system. The pupils, which on admission were small, slightly irregular, and inactive to light, resumed normal size and activity with the return of normal intraspinal pressure.

In Cases 3 and 4, we have definite evidence of brain tissue destruction, in Case 3 in the autopsy findings, and in Case 4 in the no less reliable evidence of persistent pyramidal impairment and aphasia, which could be due only to a destructive lesion in the left cerebrum.

While anatomically they cannot be classed as subarachnoid, yet in the suddenness of onset, the spontaneity, the incidence in young and heretofore healthy persons, in whom no evidence of cardiac, vascular or blood disease could be discovered on repeated examinations, and finally, in the failure to discover any break in the continuity of the cerebral vessels in Case 3, we are forced to admit their clinical identity with Cases 1 and 2, which have been selected as types of spontaneous subarachnoid hæmorrhage.

PATHOGENESIS

This brings us to a consideration of the pathological changes underlying this condition. I wish to say at the outset that I have had to deal with only a very limited number of cases—8 in all—of which two died, but in neither of these did exhaustive examination of the cerebral vessels reveal the cause of the hæmorrhage. A review of the literature, however, indicates a number of causes, chief among which are the causes of cerebral hæmorrhage in general, *viz*, arterio-sclerosis, bacterial infection, toxic degenerative processes, notably chronic alcoholism and syphilis. With these known causes of brain hæmorrhage, whether of the intracerebral or the subarachnoid type, we are not concerned in this discussion. Only cases which have occurred spontaneously in the absence of any known arterial, renal or blood disease, have been considered as lying within the purview of this paper. In only one of the four cases cited was there any suggestion, from either the past history or clinical examination, of the cause, and that was in Case 4, which, though that of a young man, reported immoderate addiction to alcohol for several years. Probably, the best explana-

of his neck, to be very restless, extremely ugly and unlike himself. So unlike himself was he that his mother stated that when he was sick before he would do every thing she wanted pleasantly.

At this time examination showed the reflexes to be active, the pupils equal, reacting to light and accommodation, the abdomen scaphoid, and slight rigidity of the recti. The following negative facts are of interest. He had neither photophobia, Kernig's sign, tache cérébrale, retraction of the head, nor changes in the ears, throat and fundi. For a week he screamed almost steadily with the pain in the back of his neck. His skin became hypersensitive, and his muscles would twitch when touched. Kernig's sign was now present. His fever varied from 97°-104°F in a most irregular manner, heart rate, 60-90, the rhythm was irregular and the sounds of fair quality. Involuntary urination, slight albuminuria, and constipation were present. No photophobia. A lumbar puncture was done, and 15 c.c. of fluid removed, with very slight increase of pressure. The fluid was clear, eleven lymphocytes, glucose present, no globulin, no filmy clot on standing, the smear was negative for tubercle bacilli. For one week following the puncture he was less restless, the skin was less sensitive, and there was no fever. The boy only screamed occasionally and seemed better. Drowsiness then began to appear, with photophobia of the left eye. The left fundus showed engorged veins and a hazy nasal margin. Temperature was 106° F. For two weeks he became increasingly drowsy, with periods of extreme restlessness and screaming. The screaming became more frequent. The tendency to drowsiness in the daytime and restlessness at night was marked. He was very "ugly," the fever irregular, the heart action slow and irregular, urination involuntary and painful, the skin was sensitive, and the neck painful. Another lumbar puncture showed a clear fluid, with fourteen lymphocytes, glucose present, no globulin, the smear was negative for tubercle bacilli.

The boy was brighter following the puncture, stopped screaming, and was less restless, but would not answer questions. The following day he became drowsy and for a week slept most of the time. When awake he appeared bright, would look at picture books, but would not talk. The photophobia was gone and the ocular fundi appeared normal again. His condition remained unchanged for about two weeks. Then he would steal out of bed to look out of the window, but still he would not talk. About ten days later he began to say "yes" to everything, but could not be made to speak another word. He would draw pictures, climb over the top of the bed, and would attempt to get to the top of everything in the room. He would obey when spoken to.

The following incident will give some idea of his mental condition at this time. I asked him to write his name and he wrote "Donal Simmmml." His expression was that of a person confused. I did not correct him, but repeated the question on several days, and he wrote always as above. Finally, I wrote his name correctly and he copied my spelling. At the places of his former mistakes he would smile, and appeared quite pleased to have overcome his difficulties. For the next few weeks he was taught a large number of monosyllabic words, and was taught to use them intelligently. Later, a few simple mental problems were given which he learned to answer. He was very slow of thought.

About the last of August, almost five months after the onset of the disease, he began to have a slight stoop forward and a somewhat expressionless face. He developed some bad habits. He would run away from home and drive on delivery teams, pull the cat's tail, was disobedient and had a very disagreeable manner. He was mentally sluggish, would not touch the piano, and would not concentrate upon anything for any period of time. There was an absence of personality.

To day the boy shows much the same stoop, much the same facial expression as he did five months after the onset of his illness. No other characteristics of Parkinson-like syndrome have developed. Through careful home training and education at school, starting with blocks and paper objects, etc., the boy's mental condition has improved so much that he has returned to the regular school

grades to carry on his work. He is with children much younger than himself, but still is slow of thought and has become once more an obedient boy.

This patient illustrates the psychotic type of encephalitis lethargica. There was an onset of an infection resembling an intestinal disorder, subsequent eye symptoms and drowsiness, preceded by extreme restlessness, and followed by mental changes. A boy of excellent habits becomes a bad boy, develops slowness of thought, speech changes, and aphasia.

The difficulty in diagnosis is quite apparent. In children recovery is not as common as in adults, many of these children becoming a care to the State.

The next history is one which emphasizes the lethargic form of the disease and the type from which, no doubt, the misnomer "sleeping sickness" was derived.

CASE 3

A McC, aged 25 years, a lineman, took ill in August, 1925, with slight fever, constipation and restlessness. These symptoms lasted for a brief period, when he became drowsy and developed diplopia. The drowsiness and diplopia passed off in a few weeks and he returned to his work. For the next few months he appeared to be his former self. In February, 1926, six months after the onset of his disease, he began to have sleep spells in the daytime. These became so marked that he would fall asleep while working on the pole as a lineman. His foreman became frightened that he would fall and gave him work on the ground. He would sit and sleep all the time, except when aroused by his fellow workmen. A nervous twitching of his muscles appeared about the same time. Examination at this time showed a marked inequality of pupils, which reacted to light and accommodation, some ptosis of both eyelids, slight spasticity of all his muscles, and some change in his facial expression. No tremor was present and his appearance was not that of the Parkinsonian type. The blood Wassermann was negative. The heart, lungs and abdominal viscera showed no abnormalities. For months he would sleep in the daytime, unless aroused, but was not so sleepy at night. His eyes remained unchanged. This patient was classified as a lethargic or somnolent-ophthalmoplegic type.

The types illustrated by the three foregoing histories have progressed and resulted in disabilities. Milder grades of the disease have been seen which did not result in severe disabilities. These milder forms may result in slight permanent speech defects or in slight permanent palsies. The following history illustrates this type of case.

CASE 4

J. R. S., aged 40 years, a janitor, took sick on April 18, 1924, with "la grippe" or "influenza." For one week he ran an influenzal course, and then he began to talk at random, to be very stupid, and to complain of pains in his muscles. He was very restless at night, talking wildly, but showing no signs of violence. For two days he had diplopia and a temperature of 99°-102°F, irregular in type. The wild talking continued for twelve days, and then he became very drowsy and stupid. There was no fever. Throughout this period he had fine irregular twitchings of his muscles. In another week he became brighter, the twitchings were gone, but the diplopia re-

turned. The right pupil became larger than the left, both pupils reacted to light and accommodation, muscle spasticity was very slight. Two weeks later the diplopia disappeared, but the large pupil remained. From this time on he gradually became stronger and returned to his former work. To day he shows only a slight monotony in his speech, the right pupil larger than the left, a slightly altered facial expression, and some slowness of thought. He works hard, does his work well, and, to the casual observer, he is his former self.

A number of very mild cases must be seen and pass unrecognized, owing to the difficulty of diagnosis in the early stages.

A type which unfortunately I have not seen in practice in New Brunswick is the "hyperkinetic." This has the main characteristics of the former types, but also has the severe symptoms of choreic movements or myoclonic contractions. The choreic movements may be irregular or regular, the regular, as in an extremity contracting 18-20 times a minute, or as twitchings in the abdominal muscles. The myoclonic variety may show parts of muscles contracting irregularly, due to an irritative lesion of the spinal cord. This type may go on to recovery, or may result in severe permanent disabilities. The fulminating form of this type, with death in a few hours, I have not seen in New Brunswick.

In a patient whom I saw outside of the province the choreic movements were bizarre, the restlessness extreme, the diaphragm contracting irregularly, with very difficult and irregular respiration. Death occurred in a few hours.

TREATMENT

The treatment of encephalitis lethargica is symptomatic, no specific remedy having been

found. The restlessness is improved greatly by lumbar puncture. Spasticity may be lessened by hyoscine, but will return unaltered after the drug has been discontinued. Hexamine is a useful drug and has been used in large doses in my cases. Potassium iodide and salicylates have been tried. Rest, skilful nursing, and re-education are valuable.

COMMENTS

A review of these histories shows that a patient taking sick with "influenzal" symptoms, who in a few days becomes restless, with slight fever, and develops transient eye symptoms and persistent drowsiness, should be suspected of being ill with encephalitis lethargica. This diagnosis can be confirmed by the presence of spasticity of the muscles, painful muscular contractions, irregular involuntary twitchings, ptosis, or irregularity of pupils and by lumbar puncture. Lumbar puncture shows a clear fluid, with a very slight amount of globulin, or none at all, with increased glucose content, 10-50 lymphocytes, giving a negative Wassermann and negative for tubercle bacilli. Very often the progress of the disease must be watched in order to establish the diagnosis by the development of the Parkinsonian syndrome, or the alteration of the mental condition. Lastly, the inability to diagnose any other condition is important.

Encephalitis lethargica is more prevalent in New Brunswick than is usually thought, and it is hoped that this paper will be a means of help to the general practitioner in his efforts to recognize this disease.

New Sources of Broad Tapeworm Infestations
Report of Fourteenth Native Case—Specimens of wall eyes and pickerel have been examined from most of the commercially important Canadian lakes, and in every case plerocercoids, which Teunis Vergeer has identified as *D. latum* have been found. Ten of these plerocercoids were taken from nine fish during the examination of a lot of forty one wall eyes, *Stizostedion vitreum* Mitch., sent to him from Lesser Slave Lake. Three plerocercoids of the same species were found in three of twenty five wall eyes from Lake Manitoba. One plerocercoid of the same species was found in a single fish in the examination of a lot of twenty three wall eyes from Lac la Biche (Alberta) and one plerocercoid was found in one of fifteen pickerel, *Esox lucius* L., from Lake of the Woods. Fish from Lake Winnipegosis can not be obtained at present because of legal restrictions, but this body of water is directly connected with Lake Manitoba and fish are able to move from one lake into

the other, making it highly probable that some fish in that lake also are infested with plerocercoids of *D. latum*. All plerocercoids have been fed to dogs free from *Diphyllbothrium*. Young adults have already been recovered as a result of feeding experiments involving plerocercoids taken from wall eyes from Lake Winnipeg and Lesser Slave Lake. The other dogs have been infested too recently for the recovery of adults and are being kept in animal quarters. Three new cases of human infestation with the broad tapeworm have come to the author's attention during the last month. In six of the fourteen known native cases, the patients were of Jewish parentage. The ages of thirteen of the patients are known, and none of these are over eleven years old. Wall-eyes from each of the lakes mentioned are being shipped to several of the large cities in the United States, except during the closed seasons, which generally are short but vary in length for different lakes—*J Am M Ass*, 1928, xli, 396.

POSTOPERATIVE PULMONARY COMPLICATIONS*

By EDGAR RAE, B A , M B ,

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THE postoperative complications involving the respiratory tract have always caused the surgeon considerable anxiety. In spite of improvements in the methods of administering anæsthetics, careful pre-and post-operative care, the refinement of operative technique, and the rapidity of operative procedure, apparently the number of such cases has not been reduced materially.

The complications consist of lobar and broncho-pneumonia, acute bronchitis, pleurisy, empyæma, embolism and mediastinitis. An analysis of the complications following abdominal operations shows that they most frequently follow septic cases and are rather rare following clean pus-free operations. This would lead one to think that it may be due more to the septic condition than to ether, or any other cause often given as an etiological factor.

Pneumonia is the most frequent and serious complication, especially the cases developing within the first two days. These cases have been often called "ether pneumonias," but improperly so, for we know that, while some of them belong to the irritation class, they are not necessarily the result of anæsthesia. In this group there is usually a sharp rise of temperature (102-104 degrees), usually without chill, associated with frequency of respiration, cough in the majority of cases, with or without muco-purulent and occasionally rusty sputum, and in many cases pain in the chest. The physical signs appear within twenty-four hours, perhaps only localized râles and diminished breath sounds, which clear up in a few days or go on to definite dullness and bronchial breathing. The cases recover in from three to ten days, or end fatally.

The cases developing during the surgical convalescent period, *i e*, the 3rd to the 7th day differ little in clinical course from non-surgical pneumonia, except that a good many of them do not have subjective symptoms. Breathing is quiet, slightly accelerated, the colour good, pyrexia moderate, but the physical signs are

still present. These cases do well and are not apt to be severe in type and outcome, unless associated with some exhausting surgical condition or secondary to a suppurative process in the abdominal cavity.

We have also another group occurring during the convalescent period. They are really the result of embolism with resultant pulmonary infarction. Here, the onset is sudden, with severe and persistent pain, slight cough and slight blood-stained sputum. These cases are fortunately infrequent, because they are nearly always fatal, one of the tragedies of surgical experience. Bronchitis occurs frequently but it is exceptional for it to result fatally. Pleurisy may occur as a primary lesion, or as a sequela of pneumonia, usually in the second week. Pleurisy with effusion and empyæma occurs earlier and usually follows a localized or general upper abdominal peritonitis, affording an immediate source of infection by the lymphatics. Empyæma of itself rarely follows a postoperative pneumonia.

Lung-abscess occurs very seldom in general surgery. In nose and throat surgery pulmonary abscess is a complication by reason of the likelihood of aspiration of foreign material, *e g*, septic plugs from infected tonsils. Mediastinitis is highly fatal. It is always a potential complication in surgical procedures on the lower neck, in the presence of sepsis, or when instrumentation of the œsophagus, trachea and bronchi is carried out.

ETIOLOGICAL FACTORS

Inhalation anæsthesia, especially ether, has been blamed from time immemorial as the cause of postoperative pneumonia and bronchitis. While it is true that a few cases may be justly attributed to the irritation of anæsthetic, the majority cannot be so explained. There is much evidence to bear this out. Complications follow all types of anæsthesia, local and spinal as well as inhalation. Gottstein and Heule, for instance, reported in a series of laparotomies that more pneumonias followed local than general anæsthesia, though with less

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mortality It must not be forgotten, however, that oftentimes local anæsthesia is chosen because of the grave condition of the patient or because of evidence of recent respiratory tract infection, either one possibly being the factor responsible for the pneumonia Further evidence that ether is not always responsible for respiratory tract complications is found in the circumstance that many cases in which ether is taken badly, where there is much mucus, dyspnœa and cyanosis involving an obstructed airway to the lungs, do not develop any trouble, and, conversely, the complications sometimes follow technically perfect anæsthesia This, however, does not lessen the responsibility of the anæsthetist, or the desirability of a smooth anæsthesia free from cyanosis, vomiting and mucus Aspiration of throat contents, *ie*, mucus and food mixed with pathogenic bacteria such as the pneumococcus and streptococcus, undoubtedly at times is a contributory factor On the other hand, if aspiration alone were of great moment, I am sure that more pneumonia and lung-abscess would follow tonsil operations than are reported, inasmuch as in this type of case there is excellent opportunity for the descent of foreign material into the bronchi

TYPE OF OPERATION

How much responsibility attaches to the type of operation and the location of the operative field is a matter of opinion Statistics show that complications follow abdominal operations more frequently than elsewhere This may reasonably be accounted for by the diminished aeration of the lung and the inability of the patient to cough out mucus freely, following, or owing to, the limitation of diaphragmatic excursion due to the trauma of rough retraction, or the application of tight binders and dressings, or abdominal distension, or the pain which results from incisions close to the ribs

Sepsis is also a very important predisposing factor and acts either by impairing the patient's power of resistance or affording a focus from which infection may travel to the lungs by the blood stream or the lymphatics, presumably as septic emboli This does happen particularly in septic conditions in the upper abdomen, where there is a possibility of direct extension from the subphrenic viscera and peritoneum The anatomical channels of communication by the lymphatics and venous system are well established The lymphatic vessels from the mesentery, liver and

stomach pass directly through the diaphragm to the anterior and posterior mediastinal nodes and thence into the bronchial lymph nodes, or they pass into the thoracic duct and ultimately in this way drain into the lungs Then the mesenteric veins which are tributary to the portal system anastomose freely with the gastric, œsophageal, retroperitoneal, and hæmorrhoidal veins, and in this way afford a certain though indirect portal of entry to the lungs However, bacteriological, pathological, and clinical findings lead us to believe that embolism is an infrequent factor Whipple and Cleveland found that the pneumococcus was responsible for the majority of postoperative pneumonias, and, inasmuch as the respiratory tract is the habitat of the pneumococcus and not the abdominal cavity, the large number of pneumococcus cases occurring in abdominal operations cannot be explained on the basis of septic embolism We could account for streptococcal pneumonia in this way, but why should we not have, as we do not, a large number of colon bacillus infections of the lungs, since this is the predominant organism in abdominal sepsis? Blake and Cecil, in experimental work with monkeys, in which animals pneumonia develops and runs a clinical course comparable in every way to the human type, found that the trachea and bronchi are the portals of entry for the bacterial invasion of the lung, whether by the pneumococcus, streptococcus or influenza bacillus From the trachea the organisms proceed by the lymphatics to the bronchial lymph-nodes at the hilum of the lung, and thence by the lymphatics about the vessels and bronchi to the interstitial tissue, beginning at the hilum and extending to the periphery of the lung The alveoli are involved secondarily

A review of the foregoing statements would lead to the conclusion that there is essentially no predisposing cause for the postoperative pulmonary complications It is felt that we have to do with that indefinable, intangible thing which we term "the patient's vitality or power of resistance," and it is our duty as surgeons and anæsthetists to be more on the alert, especially with precautionary measures

BEFORE OPERATION

A careful examination with special reference to the respiratory tract should be made An infection recently subsiding or subacute, such as a coryza or laryngitis, can and does cause further complications after operation. Certainly no

person thus affected should be operated upon unless in extreme emergency. Patients should be kept in bed the day before operation, if possible with sufficient blankets on the bed, and suitable warm clothing, avoiding draughts at all times and subjected to careful oral hygiene.

CHOICE OF ANÆSTHETIC

Meet the choice of surgeon and patient in so far as it will not interfere with your own judgment. But do not attempt to adjust a patient to a given anæsthetic. The anæsthetic must be adjusted to the patient.

DURING OPERATION

Further precautions against draughts and chilling of the patient by the use of cold solutions should be taken. The operating room should be warm, avoiding all unnecessary delays during operation. The patient should not leave the operating room without a dry warm nightgown and properly warmed blankets.

The surgical technique includes the assurance of careful asepsis, perfect hæmostasis, avoidance of undue traumatism of tissue. The dressings, especially those over the upper abdomen should be applied snugly, but not so firmly as to restrict the respiratory movements.

AFTER OPERATION

Further protection against exposure should be made. Free movement in bed is to be encouraged, with elevation of the head and thorax from the flat position, especially where there is a tendency to hypostasis of the lungs.

If pneumonia or other pulmonary complications develop, the principles of the treatment of non-surgical pneumonia and lesions should hold sway. Those essentials are good nursing, plenty of fresh air, forcing of the fluid intake, especially water, enough digitalis or caffeine to support the heart, and enough sedative to relieve anxiety and pain.

Reviewing the histories of some sixteen hundred cases operated on at Grace Hospital in 1927,

postoperative pulmonary complications were found in eleven cases. Briefly these cases were —

SUMMARY OF CASES

1 A man aged 59 years herniotomy, congestion of the base of the lungs after seven days, normal three days later.

2 A man, aged 40 years hæmorrhoidectomy, dry pleurisy ten days after operation recovery.

3 A girl aged 14 years appendicectomy congestion of the base of both lungs after three days, normal two days later.

4 A man aged 22 years submucous resection some congestion of lungs next day, normal in three days.

5 A woman aged 25 years appendicectomy, dry pleurisy eleven days later normal in five days.

6 A man aged 65 years herniotomy, strangulated hernia death from pneumonia and myocarditis four days later.

7 A woman aged 38 years curettage, incomplete abortion, a septic case with phlebitis of both legs, two blood transfusions ninth day, pleural effusion, culture, negative died from septicæmia five weeks after admission to hospital.

8 A man aged 20 years mastoiditis sinus thrombosis and peri-sinus abscess death from influenzal pneumonia in three weeks.

9 A woman, aged 30 years appendicectomy, right lobar pneumonia two days after operation, death two days later.

10 A woman, aged 65 years plaster spica for fracture of femur death from pleuro-pneumonia eleven days later.

11 A woman, aged 80 years plaster spica for fracture of the neck of the femur, broncho-pneumonia cured.

The last three cases were anesthetized with nitrous oxide and oxygen. The other eight received nitrous oxide, ethylchloride and chloroform with ether sequence.

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"We have a great responsibility in functional nerve diseases, and in functional conditions which complicate convalescence from an accident, and this is a great deal more than we, as a rule, realize. We can, by supineness, make chronic invalids, or we may, by throwing the weight of our personality into these cases, restore them to work, and teach the working classes that there is much more happiness in work

than in idleness. Many working men have not yet learned that the only true happiness lies in work. It is wellnigh impossible in accident cases to instil a healthy mental attitude into a man after his case has been set down for arbitration at a county court. In deed, as a rule, nothing can be done in this direction for a man who has consulted a solicitor."—*The Practitioner*, May, 1928.

ELECTRO-THERAPY IN GENERAL PRACTICE

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THIS paper is a short report on clinical observations and results in a series of 115 cases of various diseases met in the ordinary run of general practice, in which it was thought that physical therapy, with or without other agents, would produce better, quicker and more lasting results. Where other measures besides physical therapy were used they are mentioned.

In the application and evaluation of any new form of therapy one is apt to be influenced by two general and fundamental sentiments, one or other of which is to be found in every individual, *viz.*, over-enthusiasm or the reverse, and usually results, as published, depend on which one of these sentiments holds sway in the individual making the observations and correlating the results. To obviate this probable source of error, these cases have been submitted to an independent colleague for confirmatory diagnosis, and for observation of the progress and results. So as not to take up too much space, details of general technique have not been gone into. In cases where a brief mention of some points in technique would clarify matters this has been made.

As a sufficient number of cases of the various diseases mentioned below have not been treated to warrant a definite opinion on the value of this form of therapy, the idea prompting this paper is merely to stimulate interest in this addition to the physician's armamentarium, so that its true value may eventually be measured, not from the mouths of high-pressure salesmen, but in terms of clinical experience.

The equipment used consisted of a medical and surgical diathermy apparatus and a quartz mercury-vapour (air-cooled) lamp. Briefly, the general technique, as regards ultra-violet rays, was as follows—

All patients were divided into two classes for the purposes of dosage: (1) blondes—all with blue eyes, irrespective of the colour of the skin; (2) brunettes—all others. All patients were weighed and a general examination given before beginning the treatments. The distance of the

patient from the lamp (burner) was kept constant (thirty inches), except in rare circumstances, but the time was varied.

In all dermatological cases, excepting those in which external causes could be definitely established, it was assumed that the skin condition was but the local manifestation of a generalized disease, affecting the organism as a whole. For that reason, attention was given, not only to the local lesion, but to the whole organism, in regard to foci of infection, diet, elimination, etc. For example, in acne vulgaris the comedones were expressed, and, after the removal of all grease and dirt, the sites were irradiated and then the body was irradiated as a whole. Advice was given as to diet and elimination, as well as treatment for any attendant anæmia.

During the period under review (three months), the following were treated, taking the diseases in alphabetical order—

ACNE VULGARIS

Four cases. The disease in all cases was confined to the usual location—face, front and back of the chest. These received a total of twenty-six treatments, an average of six and one-half per case. No drug was used locally, and in only one case was it thought necessary to give iron for the accompanying anæmia, in the form of Bland's pills. All the cases cleared up thoroughly to our own satisfaction and to that of the patients.

ALOPECIA AREATA

There was one case of this condition, in a young man of nineteen years of age, who had about twelve patches varying in size from a ten cent piece to a silver dollar on various parts of the head. The head was shaved as closely as possible, and the ultra-violet ray was applied by means of the air-cooled lamp, at twelve to fifteen inches from the scalp, so as to produce a first degree plus erythema. After five treatments new hair could be detected growing in these bald spots.

ARTHRITIS

The cases were divided into two general classes, *viz*, traumatic and non-traumatic. Eight traumatic and nine non-traumatic cases were treated, the non-traumatic being considered rheumatic, gonorrhœal, or otherwise. Of the traumatic cases an average of five treatments (diathermy) were sufficient to give freedom from pain, and to restore the joint to normal. Most of the traumatic cases were sprained ankles. Besides receiving diathermy, all cases were strapped with adhesive plaster. There was no loss of time from their occupations, even in the very severe cases. Of the nine non-traumatic cases four were distinctly gonorrhœal, and yielded to an average of ten treatments by diathermy to the joint and to the urethra, and in the female to the cervix and urethra. The rheumatic cases, as a rule, required a greater number of treatments, averaging about fifteen per case.

ASTHMA

One case. This received twelve treatments with ultra-violet rays, together with calcium by the mouth, resulting in a complete cessation of spasm, disappearance of the cough, and a gain in weight and appetite. Incidentally, this case had general psoriasis as well, and, to our surprise, on completion of the treatment for asthma, his psoriasis had cleared up completely.

BRONCHIECTASIS

One case was treated during the afebrile periods with ultra-violet rays (general body raying), for its general effects. After seventeen treatments there was noted a feeling of well-being, an increase in appetite, increase in weight of two pounds, but as other measures, *e.g.*, postural drainage and tonics, were used simultaneously, it is difficult to say what proportion of good, if any, was due to the ultra-violet ray.

CANCER

One case of carcinoma of the lip was treated, in a man of eighty-two years, which had recurred after removal by a so-called "cancer doctor" some years before. The growth was coagulated *in situ* and allowed to slough, which event occurred in ten days, in three weeks from the date of treatment the area was completely healed, leaving a soft pliable scar. By this

bloodless method, it was felt that any chance of metastasis was lessened or prevented altogether. Besides, the operation was an office procedure. A local anæsthetic was used.

ECZEMA

Eight cases of eczema of various parts of the body were treated. They ranged, in regard to the clinical picture, from the weeping to the dry scaly form. The severe cases (5) received a total of one hundred and ten treatments in the form of local ultra-violet ray treatments and general body raying. In dealing with this series the lesson was impressed that the ultra-violet ray is capable of doing harm, and should only be administered by or under the supervision of a physician experienced in the use of such agents. This was a case of eczema of the chin of the sub-acute form. The patient, in question, was getting along nicely on regular distance application, but it was thought that the lesion was not disappearing fast enough, so when the patch was reduced to the size of a five-cent piece we doubled the time and shortened the distance by one-quarter, protecting, of course, the adjacent normal tissue. To our surprise, the day after, his eczema was worse than it ever was and was itching and weeping. The treatments were stopped, and, after about a week, the superimposed acute condition disappeared, and slow and minimum raying brought the case to a successful conclusion. In one very bad example of eczema of the hand the lesion cleared up nicely, but recurred two weeks after cessation of the treatments. All eczema cases received calcium in some form, on the strength of the repeatedly demonstrated fact that there is often a lowered blood calcium content in these cases.

The lesson learned in these cases was that the acute and sub-acute forms were more amenable to treatment (at least by the air-cooled lamp), and that the dry scaly forms had to be rayed very heavily to produce a third degree erythema and that all scales had to be removed before success could be achieved. All the cases cleared up completely, excepting one.

EPIDIDYMITIS

One case was treated by diathermy and, was completely relieved after six treatments. The patient was not confined to bed and wore a suspensory bandage. The treatments were

given daily, and after six the swelling subsided, and patient was able to work.

FURUNCULOSIS

Four cases of this condition were treated by local and general body raying. One case, after twelve treatments, showed some improvement, but it was not a complete success. This was a case referred to us in which everything else had been tried for repeated boils in the nose. A thorough examination failed to reveal any underlying condition. Complete success was probably due to lack of the proper apparatus. A water-cooled lamp, with quartz applicator, would have produced more gratifying results.

One patient who had been afflicted with boils continuously for the past three years, has not had any for the past three months, after five treatments, the longest period of relief in three years.

GENERAL RUN-DOWN CONDITION

Six such cases were dealt with, in women of the large-family and hard household-workers type, who presented no special lesions, but complained of lassitude, headache, and a feeling of being "all in." These cases were given ultra-violet ray, (general body raying). They all showed, after an average of ten treatments, increase in weight and appetite, and a feeling of well-being. The feeling of well-being may, of course, be psychological, but the increase in weight and appetite must be credited to the ultra-violet ray.

CHRONIC GONORRHOEA

During the period twelve cases of chronic gonorrhœa in male and female, of six months to three years standing, were treated. They all had diathermy to the urethra, prostate, vagina and cervix, as the case might be. All showed, after the first two or three treatments, increase of discharge which then became gradually less, until there was complete cessation, the male missing even his "morning drop." It was found also that the urethra or cervix could be treated up to 108° F. in most patients without discomfort. All were discharged cured, after showing three negative smears from the urethra or cervix.

HÆMORRHOIDS

Two cases of external, and one of internal, hæmorrhoids were treated by electro-coagulation with the Bierman clamp. The technique followed was that of Dr. Wyeth, of New York. The first case had no occasion to lie up. The second, owing to an associated prolapse of the rectum, had to lie up for one week. The third, of internal associated with external hæmorrhoids, had no discomfort, and was able to work next day. We are convinced that this will be the standard method for the removal of hæmorrhoids in time, as it entails simplicity, no loss of time, no pain, very little if any reaction, and less expense. Two per cent novocain was the anæsthetic used in these cases.

HIGH BLOOD PRESSURE

One case of essential hypertension was treated, in a man of forty-six years of age, in whom the systolic blood pressure was 220, and diastolic 120. The systolic was reduced to 180 and the diastolic to 110, after treatments by auto-condensation. There was however a gradual return to 220/120 six weeks after the treatment had been stopped. The mode of living, diet, and elimination played no part in the case, during or after treatment, as the same regimen was followed as closely as possible during and after treatment as before it was started. The effect on blood pressure was transitory so far as can be judged from this one case.

IMPOTENCE

Three cases of impotence in young men twenty-six to forty-five years of age, were given ultra-violet ray and diathermy, in the form of sharp sparks over the lumbar vertebræ, with the Oudin current, after drugs had been given a fair trial. They had an average of ten treatments each with the result that all three cases showed marked improvement after six treatments.

LUMBAGO

Two cases of this condition were treated by diathermy. In both cases improvement was noticed immediately after the first treatment, and this improvement continued until the pain completely cleared up. The two cases had twenty-two treatments, an average of eleven per case.

MOLES

Two cases of moles of the back of the neck were treated by desiccation with the Oudin (monopolar) current. No anaesthetic was used and one application was sufficient.

MUCOUS COLITIS

(Associated with Neurasthenia)

This was a case that had been the rounds of various doctors. He had had his appendix removed for some vague pain in the abdomen. His case was diagnosed as neurasthenia associated with mucous colitis. He was given colonic lavage (Battle Creek method), and ultra-violet ray and diathermy to the colon by means of electrodes to back and abdomen. After eighteen treatments he was restored to health, gained in weight and appetite, and went back to work.

NEURALGIA

Three cases of neuralgia of the ophthalmic division of the fifth nerve were treated. In one the worst, both ultra-violet ray and diathermy were applied and marked improvement was obtained after twelve treatments. Previously this patient had been taking about sixty grams of aspirin every twenty-four hours for about two months to obtain relief. No drugs were given with treatment. The other two cases had diathermy only with complete relief.

NEUROSIS (Climacteric)

The three cases treated had the usual nervous symptoms associated with the menopause. General body baths, with ultra-violet ray were given in all cases and also calcium. The three cases had a total of forty-five ultra-violet ray treatments, and showed improvement in their mental state, gained in weight and had a brightened outlook on life.

NEURASTHENIA

Under this head were placed all cases in which there was a multiplicity of symptoms, but no lesion to be found. Six such cases had a total of eighty treatments with ultra-violet ray, with the addition of diathermy when necessary for pain. All the cases, except one, were restored to normal health, with a feeling of well-being, gain in weight and appetite, and cure of insomnia. All the cases received phosphorus and calcium in some form, in addition to the

treatments. One case, with an associated cryptic tonsil, improved at first, but later relapsed. Subsequent removal of the tonsil and further treatment did not seem to help matters. This case had more than thirty treatments.

NEURITIS

This was a case of neuritis of the right arm in a woman about fifty, who had suffered from this condition for about one year, causing a great deal of insomnia so that she had to be given narcotics. After fifteen treatments with mild diathermy and auto-condensation her neuritis disappeared, and she is now free from all symptoms and sleeps well.

NEVUS

There was one case in a child of three years, with the usual port-wine colour extending over the forehead to the eyebrow and down to the cheek bones on the right side, with hair covering the area. This area was desiccated with the monopolar current, and the area destroyed, leaving a scar which in time we hope will scarcely be noticeable. The result here was very satisfactory indeed.

PARONYCHIA

One case was treated by means of the ultra violet ray with complete success.

PLEURISY

During this period three cases of pleuritis sicca, which had a total of twenty-two treatments by diathermy to the affected part were completely relieved.

POST-FRACTURE CONDITIONS

Two cases of post-fracture conditions, e.g., stasis around the joint, restricted movements, swelling and pain, were treated by diathermy and massage. Both cases showed rapid diminution of these signs after an average of five treatments.

POST-OPERATIVE PELVIC ADHESIONS

One case, which had been operated on for "appendicitis" and "ovarian trouble" some years before. She still complained of pelvic pain, and was subsequently operated on twice for pelvic adhesions with no relief. On examination, no pathological condition could be found, and the patient was against further

exploration Diathermy was advised, in the hope that relief might be obtained After ten treatments, by means of diathermy through the vagina and lower abdomen, the patient was completely relieved

PNEUMONIA (*Lobar*)

One case This was a case of very virulent pneumonia, infection involving both lungs, with greenish red expectoration, etc After the usual treatment by means of topical applications and medicines, the patient continued to go down hill, Cheyne-Stokes respiration being present, the pulse becoming weaker and intermittent, and the patient becoming very cyanotic and delirious Diathermy was tried as a last resort, one thousand milliampères were given for forty-five minutes to the chest anteriorly and posteriorly by means of two electrodes Fifteen minutes after the application the patient complained of being very warm, perspired freely, and the cyanosis disappeared, the cheeks becoming quite red At first there was a slight increase in the pulse rate, from 140 to 150 per minute, but it became more regular and the quality was better The Cheyne-Stokes feature of the respiration disappeared also Treatment was then discontinued, but in one hour the danger signals of Cheyne-Stokes respiration, etc., returned The patient was then given another forty-five minutes treatment, but the response was not so good as at the first application Patient eventually died five hours after the last treatment

PSORIASIS

Of two cases of this disease, one was spontaneously cured during treatment for asthma, as mentioned before, after twelve treatments by ultra-violet ray The other, a case of general psoriasis in a young man of eighteen years of age, completely cleared up after eight treatments by the ultra-violet ray Both had calcium in some form.

PRURITUS VULVÆ

One case of this distressing condition in a married woman was treated by means of the ultra-violet ray The first few treatments were sufficient to allay the itching, and after eleven more the condition was completely relieved

RICKETS

There were two cases of rickets in children, eighteen months and two years old, respectively

One, a coloured child, could not sit straight and had no desire to get up or play Soon after the third treatment with the ultra-violet ray the child became brighter and made attempts to stand up He was generally keener, enjoyed his meals better, and gained in weight An associated bronchitis also improved with no other treatment This child had five treatments but was forced to discontinue owing to the illness of his mother, but the improvement was most marked

The other, a girl (white), had only one treatment, so that the effect cannot be appreciated.

SARCOMA

One case of sarcoma of the middle turbinate, in a woman fifty years of age, was treated by electro coagulation In this case, which had been going on for six months, the growth had completely blocked the right nares The portion blocking the nares was destroyed, so as to permit investigation of the posterior nares The operation was bloodless, and after about two weeks it was found that the antrum and hard palate were involved Under a general anæsthetic as much of this as possible was destroyed, and though a cure is not possible the growth has certainly been retarded and the patient saved from being exsanguinated from the many and frequent hæmorrhages she had been having

This was a growth that no surgeon, however expert, would have attempted to remove, as the operation would have been mutilating at best and metastases would most likely be formed from the carrying of malignant cells by the blood The procedure was bloodless, and accordingly, there was no danger of metastasis resulting from the operation

SCIATICA

Of four cases of this condition treated, two were completely relieved after a total of twenty treatments by diathermy, one was partly relieved, and one obtained no relief It is only fair to mention that the case that was not relieved had a mild pyorrhœa, for which removal of the teeth was advised, but the advice was not acted upon

SPERMATORRHOEA

One case of this condition was treated by diathermy to the prostate and testicle. After ten treatments there was a much diminished "loss," but the condition was not completely cured. This patient also had calcium and phosphorus.

VARICOSE ULCER

Four cases of this condition, varying from single small superficial ulcers to many deep craters in each case, were treated. The four cases received an average of ten treatments each with the ultra-violet ray. No case was confined to bed with elevation of the limb. A supporting crepe bandage was however used in all cases, and all had calcium in some form. No topical application was used, excepting the painting with 2 per cent mercurochrome before each exposure. In all cases it was noticed that the terrible itching ceased after the first treatment, and the pain was relieved, or disappeared completely, after the second or third treatment. Any associated eczema in the region of the ulcers cleared up completely. An elastic stocking, following the healing of the ulcers was advised in all cases.

WARTS (*Common and Venereal*)

Eight cases of warts of various parts of the body were treated by desiccation with the Oudin current. One application was sufficient in all, and in only one case, of the venereal type, involving the entire corona, was it necessary to use a local anaesthetic. In our opinion it offers an easy and quick method of removing these annoying things, far superior and safer than the old way, with applications of caustics such as nitric acid.

CONCLUSION

Following our limited experience with this form of therapy we are of the opinion that it offers many advantages over other forms of therapy in the treatment of many conditions that come within the purview of the general practitioner, but there are two essentials, apart from good equipment and technique, namely, perseverance on the part of the patient and stick-to-it-iveness on the part of the doctor.

I take this opportunity of expressing my grateful thanks to Dr W. J. Egan for valuable and helpful advice during the period under review, and to Miss Bessie McNeil, R.N., who assisted in carrying out the treatments.

PNEUMOCOCCIC MENINGITIS*

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A RECENT series of cases of pneumococcic meningitis admitted to the medical service of Dr. A. H. Gordon and Dr. C. A. Peters in the Montreal General Hospital forms the basis of this paper.

Whether one can classify such cases into primary and secondary groups is debatable. Just as one speaks of primary pneumococcic peritonitis, so there are cases which must be called primary meningitis of pneumococcal origin. The larger group, however, is made up of cases that are secondary to pneumococcal infection elsewhere. They can be arranged as follows: (a) Cases with original foci of infection, acute or chronic, in paranasal sinuses, middle ear, and

mastoid areas, (b) Cases following fracture of the base of the skull, especially those that open a path of infection through the sinuses, middle ear, or pharynx, (c) Cases in which there is a preceding blood-stream infection. This last group is again subdivided into primary and secondary septicæmias, the latter being best exemplified by the septicæmia that complicates a lobar pneumonia. This is in accord with Baldwin and Cecil's conclusion that, just as the commoner pyogenic infections are usually localized but at any time may progress to the septicæmic stage, so may pneumonia lead to pneumococcic septicæmia.

The prognosis of pneumococcic meningitis is exceptionally grave. Kolmer reports a mortality of 100 per cent in 14 cases of various types.

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Schottmüller records a similar issue in 100 cases. Cole has observed 8 cases of meningitis secondary to pneumonia out of a total number of 770 cases, and all were fatal. It is not, however, uniformly fatal, for authentic instances of recovery are found scattered throughout the literature. Jemma in 1896 reported the first such case, and more recent recoveries are quoted by Cumming, Campbell, Ratnoff and Litvik, Simpson, Syngé, Douthwaite, Harkavy, Globus and Kasanin. Cecil and Baldwin point out that the presence of infection in the blood is an important determining influence on prognosis in a pneumonic infection. They found that the total mortality rate for thirty-seven patients with pneumococcus pneumonia with positive blood cultures was 78.3 per cent, in contrast with a death rate of 10 per cent in seventy cases with sterile blood cultures.

The therapeutic procedures followed in cases of pneumococcic meningitis with recovery have been (1) Intrathecal serum therapy, as in the case reported by Simpson. (2) Repeated lumbar and cisterna magna punctures, alone or combined, as recorded by Globus and Kasanin, and Syngé. Rolly also reports a case of pneumococcic meningitis coexistent with pneumonia in a child in whom sixteen lumbar punctures were performed and 600 c.c. of spinal fluid withdrawn, with a favourable outcome. (3) Laminectomy for continuous drainage, as suggested by Hill and Rainey and Alford. (4) The injection of Morgenroth's optochin hydrochloride by the method of Ratnoff and Litvak. Spontaneous recovery has been recorded by Parkinson.

The following case reports represent various types of pneumococcic meningitis.

CASE 1

Male, aged 15 years, admitted January 13, 1928.

Complaints—Vomiting, convulsions, unconsciousness.
Family history—Irrelevant.

Personal history—The patient had been admitted to the Montreal General Hospital on December 20th, subsequent to a head injury, and was discharged on January 3rd, in good health, with a diagnosis of contusion and concussion, and an x-ray finding of fracture of the base of the skull in the right frontal and ethmoidal regions.

Present illness—He was apparently well until the night of January 12th. That night and the following day he vomited on several occasions, and also complained of right sided earache. On the next afternoon he had a convulsion and until admission that night had been very restless and semicomatose.

On admission his temperature was 104°, pulse, 116, respirations, 32. He was semi-comatose and was tossing restlessly in bed. The pupils were dilated but active. Neither herpes nor nasal discharge was noted. The right ear drum was reddened and bulged somewhat. The glands, throat, lungs, heart and abdomen were negative. The blood pressure was 132/78. No cranial nerve lesion

was made out. The extremities showed free movements, abdominal reflexes and knee jerks were absent. Bilateral Kernig sign and rigidity of the neck were present. The urine was negative. The white blood cells numbered 24,000 per cmm. Lumbar puncture, under anaesthesia, revealed a turbid fluid, the cell count of which was 19,000 polymorphonuclear cells predominating. Scattered Gram-positive, lancet-shaped diplococci were found in the direct smear. Paracentesis of the right ear was done and only a serous exudate escaped, culture of which yielded *S. aureus*. On culture of the spinal fluid pneumococci were isolated. Mastoid drainage on the right side was performed but only an acute hemorrhagic condition without pus was found. Death occurred on January 15th after a four days' illness.

The *clinical diagnosis* was pneumococcic meningitis (type IV), fracture of the base of the skull, right acute otitis media.

Autopsy findings—Meningitis with purulent exudate at the base and spreading to the cortex, linear fracture of the base of the skull, involving the right frontal sinus and extending along the floor of the anterior fossae (this was probably the path of infection). The right frontal, ethmoidal and sphenoidal sinuses contained pus and pneumococci were cultured from it, the right mastoid area presented granulation tissue and some pus, but this was sterile on culture. Pneumococci were isolated from the meningeal exudate.

CASE 2

Female, aged 66 years, admitted January 6, 1928.

Complaints—Unconsciousness.

Personal history—The daughter stated that her mother had had good health, except for neuralgic pains about the face for the past year. About December 26th, 1927, the patient developed a slight chest cold, and also complained of backache and of sore eyes. She remained in bed from the onset of the illness. For a few days she had a right sided earache, but this disappeared on January 3rd without discharge of pus. For ten days periods of perspiration had alternated with those of chilly sensations. Nausea appeared on January 5th, with vomiting the following day, and shortly afterwards unconsciousness which persisted till admission.

On admission, the patient was comatose but resisted movements. The pupils were small, inactive and equal. The throat, lungs, heart and abdomen were negative. The blood pressure was 150/80. No cranial nerve lesion was made out. There was movement in all limbs, but she did not respond to questions. The knee-jerks were feeble. There was plantar flexion, also a bilateral Kernig sign and rigidity of the neck. The right ear drum showed some redness, but there was no tenderness over the sinus. The urine was negative. The white blood cell count was 12,800 per cmm. On lumbar puncture, spinal fluid escaped, in which Gram-positive diplococci were found in direct smear and later were isolated in culture as type IV pneumococcus. The otolaryngologist confirmed the redness of the right ear-drum, with loss of lustre and light-reflex, but, as there was no sagging of the posterior wall, he did not consider the mastoid to be a focus of infection. On January 8th the patient developed some feeble clonic spasms in right arm, and also a sanguino-purulent discharge from the right nostril. In view of the history of neuralgic pains in the face, the presumption was that the meningeal infection arose from a paranasal sinusitis. Death occurred on the third day of meningitis.

The *clinical diagnosis* was pneumococcic meningitis, and paranasal sinusitis.

Autopsy showed purulent meningitis, sphenoid sinusitis, and right mastoiditis. The mastoid area was less involved than the sphenoid sinus. Pneumococci were recovered from each of the above lesions.

CASE 3

Male, aged 10 years, admitted March 17, 1928.

Complaints—Headache, vomiting, restlessness, delirium.

Family and personal histories were irrelevant.

Present illness—On March 16th the patient com-

plained of headache about noontime, and vomited on returning from school in the afternoon. He was put to bed and fever was noted. Vomiting occurred several times that evening and he soon became restless and delirious. These symptoms gradually progressed till he was admitted to hospital on the night of March 17th. No history of accident or earache.

On admission, his temperature was 103°, pulse, 108, respirations, 40. He was delirious and was tossing about in bed, resisting all movements. Photophobia was present, the pupils were equal and active. No herpes. The ears, throat, heart, lungs and abdomen were negative. No cranial nerve involvement or motor paralysis was found. The knee-jerks were absent, plantar reflexes showed no reaction. No clonus. Bilateral Kernig sign and rigidity of the neck were present. Lumbar puncture showed a pressure of 30 mm of mercury, and 12 c.c. of turbid spinal fluid were removed slowly. The cell count was 500 c.mm., 75 per cent of which were polymorphonuclear cells. Gram positive lancet-shaped diplococci were found in direct smear, and type IV pneumococcus was reported on culture. One hour after lumbar puncture the patient became suddenly cyanosed and died, after an illness of thirty-eight hours.

Clinical diagnosis—Fulminating pneumococcal meningitis, so called "idiopathic." No autopsy was allowed.

CASE 4

Male, aged 50, admitted February 9, 1928

Family and personal histories—Irrelevant

Present illness—This patient was admitted on the tenth day of illness, with a frank lobar pneumonia. The rest of the physical examination, including the urine, was negative. The white blood cell count was 17,000 per c.mm. Sputum typing showed type IV pneumococcus. The temperature on admission was 101°, pulse, 100, and respirations, 40. The following day the temperature and respirations had fallen to normal. On this day a routine blood culture was taken, and four days later was reported as positive for pneumococcus, but owing to an accident, typing was not done. From the fifteenth to the eighteenth day of illness there was a remittent fever, associated with chills and profuse perspirations. There were no pulmonary signs that could account for this course. On the nineteenth day the patient was somewhat drowsy and listless. An apical systolic murmur was then noted for the first time. The pupils were small and sluggish. Slight left facial weakness and some stiffness of left arm and leg were noted. A left-sided Babinski sign was elicited, as well as a bilateral Kernig sign and rigidity of neck. A blood culture was again made and was reported the following morning as positive for pneumococci. A lumbar puncture was then done and clear fluid escaped, the cell count of which was twenty, and globulin was absent. On culture, no growth was obtained. The next day a complete left-sided hemiplegia was found, with weakness of the right upper extremity. The clinical interpretation of this case was then considered to be a spreading cortical meningitis, as a part of a pneumococcal septicaemia, with an acute mitral endocarditis of the same origin. The possibility of the cerebral features being due to an infected embolus was thought unlikely, on account of the slowness of the onset of symptoms. On February 20th the pneumococcus from the bloodstream was reported as the type I strain. There was gradual extension of the cerebral symptoms, and, with little hope of obtaining any benefit, the patient was given 75 c.c. of type I antipneumococcal serum intravenously. Death occurred on the 21st day of illness.

Clinical diagnosis—Lobar pneumonia, pneumococcal septicaemia (type I), pneumococcal meningitis, acute mitral endocarditis of pneumococcal origin.

Autopsy findings—Lobar pneumonia, affecting the right upper and middle lobes in resolving stages, endocarditis with recent vegetations on the mitral valve, multiple infarcts in the spleen, purulent meningitis, the exudate covering the right cerebral hemispheres much more extensively than on the left side, from this exudate pneumococci were isolated.

CASE 5

Male, aged 29 years, admitted on March 3, 1928

Complaints—Weakness, general malaise, fever, painful left eye.

Family and personal histories—Irrelevant

Present illness—The onset of the present illness dated from February 24th. According to his physician, the course had simulated in many respects that of typhoid fever, as evidenced by his general appearance and the development of a palpable spleen, but the temperature had been intermittent with ranges from normal to 104° daily, and was accompanied by chills and profuse sweats. On March 1st an acute pain developed in the right eye, and since then that eye had become extremely reddened. The patient also complained of severe frontal headache on admission.

On admission, his temperature was 103°, pulse, 118, respirations, 32. He was semi-stuporous and typhoidal in appearance, was able to give part of his history, but had to be continually aroused during the history taking. The left eye presented an intense degree of panophthalmitis. There was no tenderness over the sinuses, and the ear-drums were intact. X-ray examination of the sinuses was negative. Herpes was not present. The tongue was dry and coated with sordes. The lungs and abdomen were negative, except for a easily palpable spleen. There was a loud apical systolic murmur, which was present when first seen by his physician, but was observed to have increased in intensity during the progress of his illness. Roseola, petechiae and tender points on finger-tips were absent. Superficial twitchings were noted in the right arm. The cranial nerves were intact. No loss of motor power and no pathological reflexes were found, except for a bilateral Kernig sign and rigidity of the neck. The urine was negative. The white cell count was 19,000 per c.mm. The spinal fluid was turbid, the cells numbering 1,000 per c.c., 80 per cent of which were polymorphonuclear in type. The Pandy and Ross-Jones tests were three plus. Gram positive diplococci were demonstrated in the direct smear, and type IV pneumococci were cultured. Blood culture was reported as positive for the same organism. Both results were confirmed on subsequent cultures. Towards the end of the course numerous petechiae appeared on the abdomen and increasing coma developed. The patient was given one blood transfusion and many glucose-saline intravenous injections, and there were repeated lumbar punctures. A total of 400 c.c. of spinal fluid were removed, and as much as 80 c.c. were taken off at one time. Death occurred on the twenty-sixth day of illness and on the tenth day of the meningitis.

Clinical diagnosis—Pneumococcal septicaemia with complicating meningitis, endocarditis, and left panophthalmitis.

Autopsy findings—Basilar meningitis, acute mitral endocarditis, left panophthalmitis, infarction of spleen and kidneys, pneumococci were isolated from the meninges and mitral valve.

SUMMARY

- 1 Five cases of pneumococcal meningitis are reported, all of which were fatal.
- 2 The age incidence varied from ten years to sixty-six.
- 3 The etiological factors in this series are—
 - (a) Fracture of the base of the skull
 - (b) Paranasal sinusitis and mastoiditis
 - (c) So-called primary cryptogenic meningitis
 - (d) A septicaemia following a frank lobar pneumonia
 - (e) A primary septicaemia
- 4 Duration of meningitis in these cases, minimum, 38 hours, maximum, 10 days.

5 In two cases there was acute endocarditis of pneumococcal origin

6 One case showed general pneumococcus infection without localization in the lungs

7 One case of fatal general pneumococcus infection occurred even after almost complete resolution of the primary pneumonic lung

8 A rare complication of metastatic panophthalmitis

In conclusion, I wish to thank Dr A H Gordon and Dr C A Peters for their kind permission to report these cases, and also to express my appreciation to Dr Gordon for his valuable assistance in the preparation of this paper

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ECZEMA*

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IN any discussion on eczema it is first of all necessary to define exactly what type of superficial catarrh of the skin one has in mind. Defined by Willan (quoted by his pupil, Bateman) eczema consists of a circumscribed patch of closely set, pin-head sized, deeply formed vesicles, accompanied by itching and burning. At first there is very little inflammation at the bases of the vesicles, but this phase is of short duration, and in the fully developed patch there is redness and swelling.

A study of sections cut from such a patch at various stages of its evolution shows that the earliest change is a dilatation of the superficial capillaries, with a pouring out of lymph from these vessels into the intercellular spaces of the epidermis. This causes spongiosis or œdema, and as the pressure increases the intercellular fibrils break, the cells are pushed aside, and a sterile vesicle is formed in the middle of the prickle cell layer. This enlarges to the size of a pin-head and may rupture on to the surface (weeping eczema). The process may at any time be checked, lymph being poured out of the capillaries in amounts insufficient to cause weeping on the surface and giving rise merely to

œdema. This causes an increase in the rate of multiplication of the cells of the stratum germinativum, and may even cause mitosis in the prickle-cell layer, leading to thickening (acanthosis) and to a derangement of the process of keratinization (parakeratosis) which results in the formation of scales.

There is another type of inflammation of the skin resulting from a specific irritant, such as hair-dye or a plant. In this the inflammation is more diffuse and the vesicles more superficial, not all of one size, and frequently coalescing to form bullæ. The trouble subsides so soon as the irritant is removed and only recurs on the exhibition of the specific irritant. This condition is labelled dermatitis. Etiologically, it differs from eczema in its specificity. There is an idiosyncrasy on the part of the individual. I have two patients, dentists, with an idiosyncrasy for novocain, in whom this drug always produces a dermatitis when it comes in contact with the skin, yet neither has ever had an inflammation of the skin from any other cause. This idiosyncrasy may be acquired or inborn. As an example of the acquired type, there is the photographer, who after many years in his profession may suddenly develop an idiosyncrasy for metol or hydroquinon and thereafter a dermatitis de

* Read at the annual meeting of the Canadian Medical Association, Toronto, June, 1927

AN UNUSUAL TYPE OF SUPERNUMERARY DIGIT

By S H CORRIGAN, M D, C M,

Lampman, Sask

Cases of supernumerary digits of ordinary types are frequently observed. Of the type I present I can find no record. A well known teacher of anatomy in London, after examining the photograph, stated that he had not seen nor heard of such a case as this.

The child (No 179, Lampman Union Hospital, 1926), in all other respects normal, was born of Canadian parents. Both families disclaimed a history of abnormal structures, but I have learned that a child of the father's brother has a supernumerary digit.



The illustration, from a photograph when the child was three months old, shows the pedicle growing from the external lateral aspect of the proximal phalanx of the little finger.

Good tactile sensation was demonstrated over all parts of the structure. The pedicle was entirely flaccid, and could be considerably rotated or elongated by traction, without disturbing the circulation. Amputation was performed when the child, four months old, was

brought to the hospital with the entire structure deeply evanosed.

The terminal portion contained a well developed cartilaginous phalanx. A section of the pedicle showed one main artery and vein.

GIANT-CELLED TUMOUR OF THE NECK OF THE FEMUR OPERATION WITH PROBABLE CURE*

By W G TURNER, M D,

*Royal Victoria Hospital,
Montreal*

A decided advance in classification was made when the word "sarcoma" was dropped from the nomenclature of this class of tumour. Still, it must be seriously recognized that there is progressive local destruction of bone as the growth advances. It is necessary to keep this in mind if we are to improve and gradually perfect a technique which will save the limb and also prevent grave permanent disability. Dr Ewing recently, in Washington, struck a very true note when he stated that in most cases of recurrence the surgeon should realize his imperfect operative technique.

The present case is that of an undergraduate nurse, a patient of Dr Stevenson, who was quite able to do her work until March, 1924. At that time she complained of some pain and weakness in the right hip joint. The condition gradually became aggravated until she was obliged to go off duty and to lie up most of the time. At that time there was some tenderness of the joint, but she had full movement, the x-ray showed some rarefaction of the neck of the femur (Fig 1). The pain and weakness became more pronounced and an x-ray, taken in June, 1924, showed more rarefaction and a coxa vara condition (Fig 2). In August, 1924, when turning over in bed a pathological fracture of the neck of the femur was produced (Fig 3).

On December 23, 1924, I saw the patient and the problem naturally was to determine the cause of the fracture, whether it was fibrocystic disease or tumour. We were rather more inclined to believe that it was a giant-celled

* Read before the Montreal Medico Chirurgical Society, April, 1928. Received for publication, August 16, 1928.

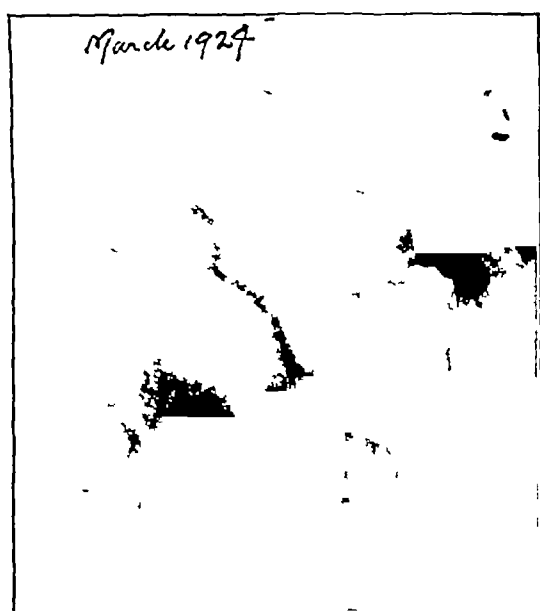


FIG 1

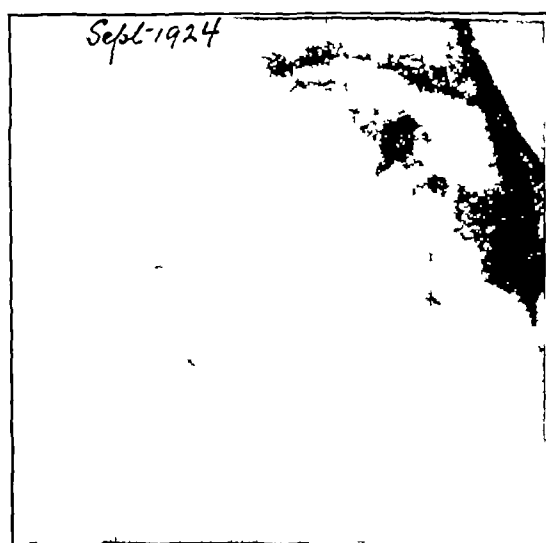


FIG 3

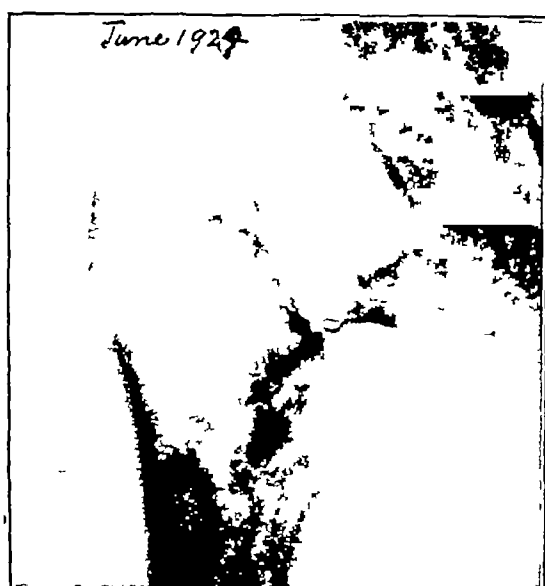


FIG 2

tumour. The operative problem was grave, as there was a marked loss of continuity in the neck of the femur, due to the extensive tumour involvement which left a mere shell with a fracture in the middle of the neck.

On December 26, 1924, the joint of the femur was exposed widely by the Smith-Peterson incision. The neck of the femur was found to consist of a soft shell from the acetabular rim well down to the trochanter, the fracture being felt about the middle of it. A flap of this shell was reflected and the contents were found to be

of the typical jelly-like consistency. This material was carefully spooned out and the lining was found to be smooth, except at each end. When it was swabbed out the cavity was left remarkably dry and practically no oozing was noted. The ilium was then exposed and a number of bone slivers were chiselled off and packed firmly into the cavity. One piece seemed to pierce through the shell into the acetabulum. The flap was then sutured in place, and the result was a fairly firm mass representing the neck of the femur. The wound was closed, and a long plaster spica applied.

There were no untoward symptoms after operation until about March, 1925, when Dr Stevenson found a swelling below the trochanter. This corresponded to an x-ray appearance which we had noted in December but had let alone, as we did not like to excavate the whole trochanter at the time. He exposed this swelling and carefully cleaned out the tumour and closed it up. This healed *per primam*. For eighteen months the patient was kept recumbent, and then fitted with a caliper walking brace. The bone seemed to regenerate firmly in the neck of the femur and below. I show an x-ray taken in June, 1927, which demonstrates strong bone and a moderate coxa vara (Fig 4).

Pathological examination of each specimen by Professor Oertel and Professor Rhea showed a typical giant-celled tumour (Fig 5).

The report in June, 1928, is that this patient walks with a slight limp, without pain, with full range of movement, and that she can



FIG 4

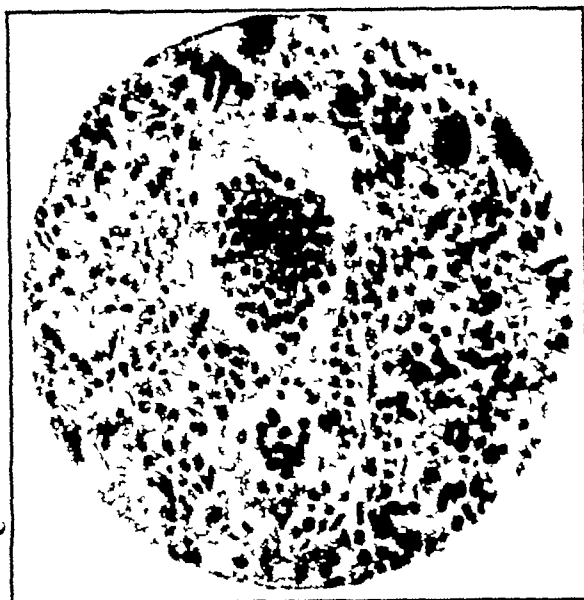


FIG 5

endure a full day's occupation. As this report is made three and a half years after operation we are encouraged in the belief of probable cure. I can offer no explanation for the vascularization of these pieces of autogenous bone-graft to form a firm supporting osseous structure replacing the original neck of the femur. The cavity in which they were placed at the time of operation seemed dry, and close inspection showed practically no oozing of blood into the cavity.

EMBOLISM OR THROMBOSIS OF THE CENTRAL RETINAL VESSELS?*

BY ANTONIO CANTERO, M.D., C.M.,

Quebec

The central artery and vein of the retina are both liable to be suddenly obstructed, and the result is sudden and usually complete loss of sight. The first case of this kind was seen by Graefe in 1858. Since that time somewhat similar cases have been reported, but when we find the retinal circulation suddenly obstructed we must use some care in making a differential diagnosis between embolism and thrombosis. The following case is of some interest, and may serve as an illustration.

A white male, 33 years of age, by occupation a steel worker, was admitted to the hospital complaining of sudden loss of the sight of the right eye and epistaxis.

Family History—Negative

Personal History—Denies having had any diseases of childhood, in 1915, pleurisy, in 1918, an attack of jaundice which lasted three weeks, in 1921, gonococcal infection. Lues was denied.

History of the Present Illness—Eight weeks previous to his admission the patient was returning home from church when he noticed a sudden loss of sight in the right eye. He described it as if a dark curtain was pulled suddenly down in front of the eye. He consulted someone who gave him thirty-eight ultra-violet treatments to the eye. Since then there has been total blindness of the eye, and there have been no signs of improvement.

Physical Examination—The patient was found to be suffering with a definite cardiac lesion, i.e., mitral stenosis and aortic regurgitation, systolic blood pressure of 110, otherwise his other systems were negative. Urinalysis negative. Blood count red blood cells, 4,200,000 per c.mm., white blood cells, 4,400 per c.mm., hemoglobin, 78 per cent. Blood Wassermann test, 4 plus.

Ophthalmoscopic Examination—Left eye was normal. Right eye, a gray opacity, situated about the region of the macula and the optic disc.

* From the service of ophthalmology and otolaryngology, Jeffery Hale's Hospital.

was noted. There was a definite retinal haze. The fovea centralis could be made out, shining as a cherry-red spot. About its small vessels of the macula appeared and, though concealed in the opacity, they shone out in bright contrast to the white background. Pressure upon the globe evoked no pulsation of the arteries or veins.

By contrast, in thrombosis of the vein the arteries are diminished, but not empty and thready, the veins are of increased size, the nerve is whitest or is easily congested. Opacity in the retina, when it appears, develops quickly and may be very extensive, the fovea will have a bright red colour if the retina is opaque. Pressure may not cause pulsation, yet it has been produced in the veins. Vision is greatly reduced and may be destroyed, but eccentric sight sometimes remains, and improvement sometimes occurs.

SUMMARY

To recapitulate our findings (1) The sudden

and total loss of sight, with the absence of any improvement. (2) The definite cardiac lesion. (3) The classical ophthalmoscopic picture, *i.e.*, the arteries shrunken and the smaller ones invisible, veins reduced in size, especially at the optic nerve, the absence of retinal hæmorrhage, and the grayish white opacity about the region of the macula.

It should be noted that the milk-white opacity of the retina and the vivid redness of the fovea are common to many kinds of stoppage of the retinal circulation, and that too much stress should not be put upon the findings in making a differential diagnosis.

With the clinical history and ophthalmoscopic findings, the diagnosis of embolism of the central retinal artery is justified in the above case.

The prognosis is bad.

General treatment for his cardiac lesion was advised, with specific treatment for syphilis, *i.e.*, a full course of arsenic.

Diabetes of Ovarian Origin.—Carnot, Terris, and Caroli describe the case of a married woman, aged 36, in whom diabetes had not been relieved by anti-diabetic diet. The glycosuria amounted to approximately 100 grams daily, acetone and diacetic acid were sometimes present. The blood sugar was never more than 2 grams. The patient lost more than 22 pounds in weight in two months and became much weaker. Two preparations of insulin were administered with out result, except that diacetic acid disappeared from the urine. Prior to the first symptoms of diabetes menstruation was delayed, scanty, and finally absent, but before it ceased altogether it was noticed that the glycosuria increased a few days before the period. Apparently the ovarian endocrine action reduced the quantity of blood sugar. An ovarian extract was injected in doses of 1 ccm every second day. After the second injection a rapid fall in the glycosuria occurred, and the patient's ovarian pain disappeared. The general health improved rapidly, and the patient gained 11 pounds in ten days, menstruation reappeared normally after an absence of three months. The patient lost the saccharine taste in her mouth and her excessive hunger. Some days after the last injection of ovarian extract glycosuria increased, but it was reduced by a further series of hypodermic injections. The authors conclude that there is a close relationship between ovarian disturbances and diabetes, and that ovarian extract may reduce glycosuria and hyperglycæmia when insulin has failed.—*Brit M J*, 1928, ii, Epit 15.

Skin Eruptions with Phenobarbital (Luminal) —

The three cases reported by William C Menninger are the only cases in which the skin rash appeared in approximately four hundred cases in which phenobarbital has been used. From the data at hand, no relationship can be drawn between the amount of the drug and the weight of the patient. Phenobarbital may produce an urticarial reaction, or it may produce a scarlatina-like or morbilliform maculopapular erythema. In approximately 50 per cent of the reported cases of the latter condition there has been an associated pyrexia and other systemic toxic symptoms. In the face of the widespread usage of the drug, the number of cases showing such a toxic reaction must represent a very small percentage. A distinction should be made between the toxic reaction and the poison reaction. In the former, many of the cases do not show any particular relation to the dosage of the drug, and skin reactions have appeared frequently on small doses. It seems to Menninger that the cause must be a selective tissue reaction to the drug, dependent on constitutional factors about which we are still ignorant.—*J Am M Ass*, July 7, 1928.

An Early Conception of Wound-Infection.—"Upon the solution of Unity in any part of the ambient air repleted with various evaporations or aporrheas of mixt bodies, especially such as are then suffering the act of putrefaction, violently invadeth the part and thereupon impresseth an exotic miasm or noxious diathesis, which disposeth the blood successively arriving at the wound to putrefaction, by the intervention of fermentation." *Van Helmont* (1577-1644)

Clinical and Laboratory Notes

A SIMPLE APPARATUS FOR THE CONTINUOUS INTRAVENOUS ADMINISTRATION OF PHYSIOLOGICAL SALT SOLUTION

BY R. I. HARRIS, M.B.,

AND

W. O. STODDART, M.B.

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Toronto

There are technical difficulties associated with the intravenous use of salt solution which make an improved method of administration desirable. The value of large amounts of fluid in the treatment of certain surgical conditions is universally conceded, but in those illnesses in which it is most valuable its administration by ordinary channels is often impossible. Under such circumstances, intravenous injection of salt solution is the most satisfactory method for the parenteral administration of fluid. To the intravenous injection of salt solution, as ordinarily practised, there are objections and limitations, and these difficulties are particularly great in children. If we consider intestinal obstruction as an example of a surgical condition in which the use of large amounts of fluid is a valuable form of treatment, it is evident that, to be of most value, the fluid must reach the circulation in quantities sufficient to compensate the large amounts lost by vomiting, and should be given at frequent intervals, or, better still, continuously, for the whole of the period in which the toxæmia of the obstruction is present. As ordinarily administered, the salt solution is injected into a vein once or twice daily. This intermittent administration is inadequate, since the need for the salt solution is continuous. It also limits the amount of fluid which can be given, since care must be taken to avoid overtaxing the heart. As a result, the amount of fluid given daily is apt to be less than the patient's requirements. In the case of children there are additional technical difficulties. It is rarely possible, except in the larger children, to introduce the fluid directly into the vein by puncture through the skin. In infants, it is true, the longitudinal sinus can be entered by a needle through the anterior fontanelle. In our opinion, the danger of intracranial hæmorrhage and of infection, though remote, is sufficiently great to make this route unsafe except as a last resort. To administer fluid intravenously to a child ordinarily necessitates the exposure of a superficial vein through a skin incision under local anæsthesia. Since each intravenous administration can only be accomplished by a minor operation, and as the need for salt solution ordinarily

extends over several days, several minor operations must be performed. The frequent repetition of this procedure is open to obvious objections: it is unnecessarily disturbing to the patient, the available veins are quickly used up, and several wounds are produced, each of which incurs the danger of infection. The natural desire to reduce to a minimum the frequency of the procedure leads to the administration of as large a quantity of fluid at one time as is judged safe. Under such circumstances, it is easy to overstep the margin of safety, and by the rapid administration of too large a quantity of fluid to overtax a feeble heart or failing circulation.

A consideration of these objections led us to the conclusion that the intravenous administration of salt solution would be greatly improved could the solution drip into the vein at a steady rate, but sufficiently slowly to permit its use for an indefinite period of time. Once started, the fluid could then be permitted to flow as long as the necessity for such treatment remained. The advantages of such a method are that the administration of the fluid is continuous, thus meeting the needs of the patient, large quantities can be given without overtaxing the patient's circulation, and it minimizes the amount of attention required. Certain technical difficulties must be met. The apparatus must be so constructed as to prevent contamination of the fluid by any organisms in the air. There must be means for determining the rate of flow. The rate of flow must be capable of ready adjustment. Care must be taken to avoid clotting in the cannula and infection in the wound.

We have succeeded in devising a piece of apparatus which fulfils these requirements and successfully permits the continuous administration of salt solution into veins for several days at a time. The apparatus has proved so satisfactory that we feel justified in publishing an account of it. The component parts are illustrated in Figure 1 with sufficient clearness to make detailed description unnecessary.

The technique of its use is simple. More than the usual aseptic care should be exercised, since the apparatus may be in use for several days. The receptacle for the fluid should be kept covered with a gauze and cotton filter. This should not be removed to renew the fluid, but, instead, a fresh flask should replace the empty one. By using large flasks (2,000 c.c. and 5,000 c.c. in capacity) they will not need replacing more than once daily. The small veins on the dorsum of the hand and foot are most convenient to use. Prior to preparing the vein, the wrist is fixed by a light anterior splint of cardboard or plaster. This permits the patient to move his arm about without disturbing the needle materially. Under local anæsthesia, a small transverse incision is

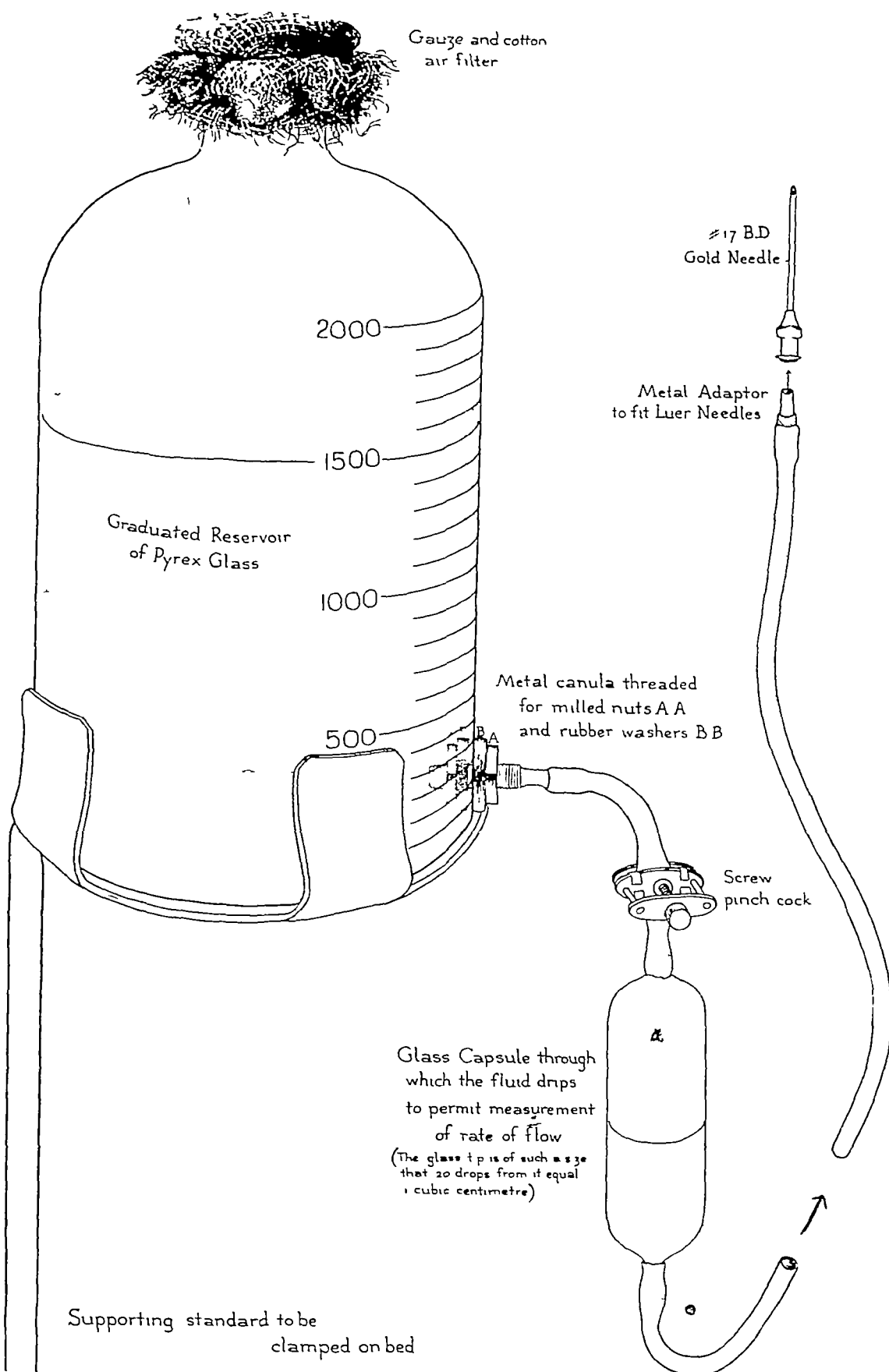


FIG 1—Diagram of the apparatus

The reservoir is made of pyrex glass in order to withstand the temperature of the autoclave in sterilization. The neck is capped with a gauze and cotton pad tied on. This is not removed as long as the flask is in use. When one flask is emptied it is replaced by a freshly sterilized full one. A hole drilled through the side of the bottle low down permits the insertion of a threaded metal tube which is held in place by nuts and rendered waterproof by rubber washers. The screw-cock permits regulation of the rate of flow. The glass capsule through which the fluid drips permits estimation of the rate of flow at any particular moment since the tip of the cannula in the capsule is of such a size that 20 drops from it equal 1 cubic centimetre.

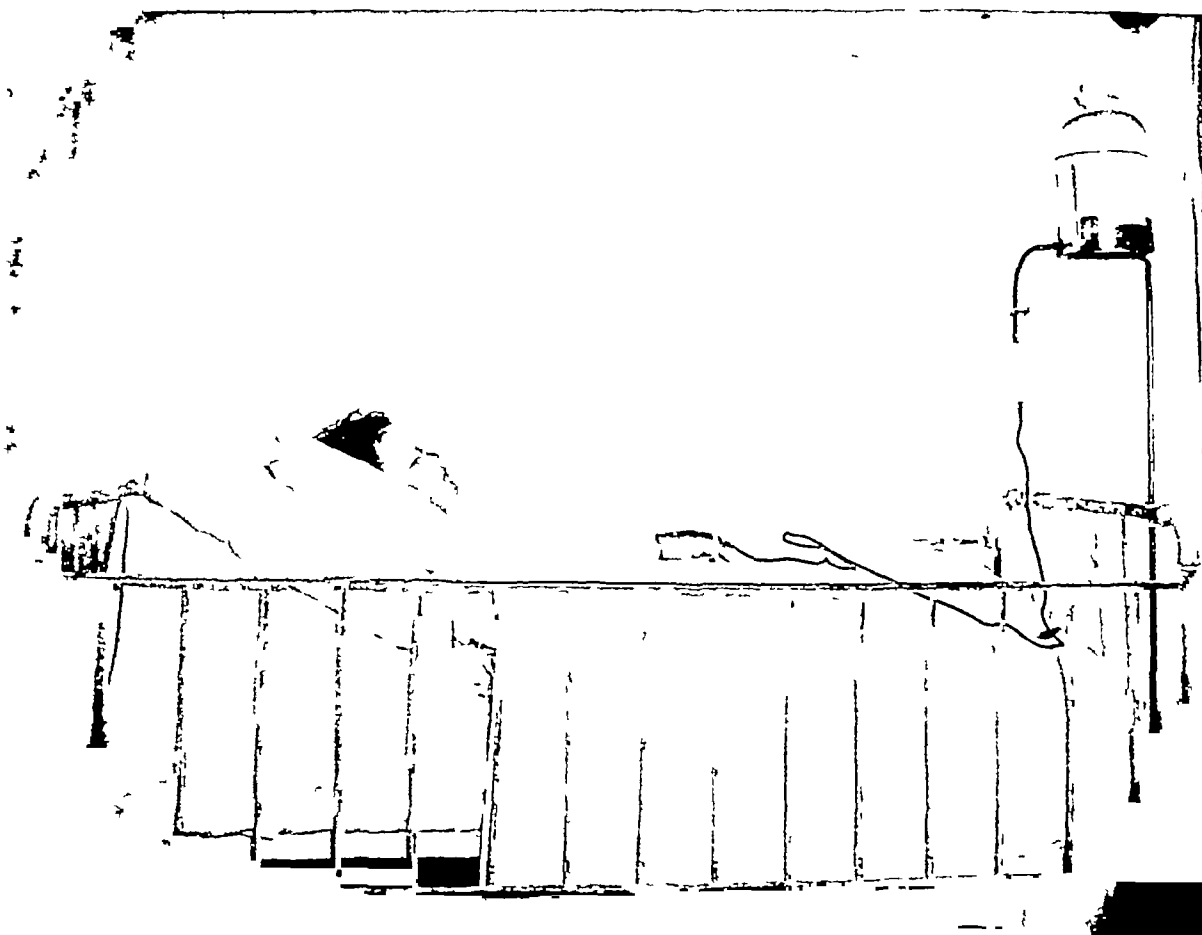


FIG 2—Photograph of the apparatus in use

This picture shows the apparatus in use upon a patient suffering from intestinal obstruction following appendicitis. For more accurate delineation of details the dressings have been removed from the hand.

made over a vein, just large enough to accommodate a No. 17 gauge gold needle. The vein is ligated below, the cannula inserted through a small cut and tied in with catgut. A piece of sterile gauze is placed beneath the cannula to steady it and maintain it at a slight angle so that the opening in the needle will not be occluded by pressing against the side of the vein. The wound and needle are covered with a piece of sterile gauze and the whole secured by an encircling strip of adhesive tape. After connecting the rubber tubing to the needle, a pad is bandaged tightly over the whole, to protect and steady it.

There are a few points of importance, attention to which will facilitate the use of the apparatus. Glucose solutions should not be used. This substance in concentrated solutions produces thrombosis when injected into veins. This property is sufficiently marked to make glucose in 50 per cent solution one of the chemicals which are used in the injection treatment of varicose veins.⁽¹⁾ Even in the more dilute solutions (5 per cent and 10 per cent), which are so frequently used as intravenous medicaments, prolonged use will also result in thrombosis. As a routine, therefore, glucose solutions should not be given. If it is considered necessary to administer

glucose intravenously with this apparatus, the required amount should be given rapidly and be followed by physiological salt solution. Physiological salt solution, or Locke's solution, are the most satisfactory fluids for use in this apparatus (Locke's solution consists of sodium chloride, 0.9 per cent, calcium chloride, 0.024 per cent, potassium chloride, 0.042 per cent, and sodium bicarbonate, 0.01 to 0.03 per cent. It contains all the saline elements of mammalian blood in their proper proportions). Clotting in the needle gives little trouble if a small vein is used and if a steady flow is maintained. The rate of flow is readily adjusted by means of the screw pinch-cock, so that any quantity up from approximately 500 c.c. per twenty-four hours may be administered. The rate of flow at any particular moment is readily estimated. The nipple from which the fluid drips through the glass cannula is of such a size that twenty drops from its end equal one cubic centimetre. By counting the drops the rate of flow per minute is readily calculated.

No attempt is made to heat the fluid before it enters the vein. To be effective, the heat would require to be applied to the fluid immediately before it entered the vein, since the rate of flow of the fluid is so slow that were heat applied at

the reservoir much of it would be lost before the fluid entered the vein. To add to the apparatus an appliance for maintaining the fluid at body temperature would add greatly to its intricacy. In our opinion, it is simpler to heat the patient by means of hot water bottles than it is to heat the fluid. As a matter of experience we have found that the administration of fluid at room temperature by this method gives rise to no more disturbance than does the administration of fluid of similar temperature by mouth.

The advantages of the apparatus are sufficiently great to have established it in our hospital. By means of it we have been able to administer adequate amounts of fluid to surgical patients with a very small amount of attention. It has been used continuously for as long a period as ten days, without any interruption in the flow and without any difficulties associated with the wound. The ease with which fluids may be administered intravenously with its aid has permitted us to give larger amounts of fluid over longer periods of time than was formerly the case. This has caused so distinct an improvement in results that we are disposed to think that previously the amounts of fluid we were administering were much too small.

There is a limit beyond which the administration should not be pushed. This varies greatly in individual cases, depending upon the amount of dehydration present and upon the amount of vomiting which is occurring, we have formulated a rough rule that the amount of fluid administered should not exceed 35 c c for each pound of body weight in twenty-four hours.

While originally devised to meet the needs of certain surgical conditions, such as the toxæmia of intestinal obstruction and of burns, the apparatus has been found so useful that it is now used in nearly all the conditions met with in hospital practice in which parenteral administration of fluids will be required for twenty-four hours or longer.

The apparatus may be obtained from Ingram & Bell, and from J. F. Hartz & Co., Toronto.

REFERENCE

1. McPHEETERS, *Surg., Gynec. & Obst.*, 1927, xlv, 541

Primary Sarcoma of Lower Lip—J. Vincent Fahs reviews fifteen cases already on record and reports one new case, occurring in a male, aged about 35, an ex-soldier and farmer, who had never served in the tropics and, aside from the usual diseases of childhood, had not had any illness of interest, though for a number of years he had had psoriasis. He stated that he had never had any venereal disease, and did not use alcohol and tobacco, no evidence of trauma to the lip could be elicited in his history. As a result of deep roentgen ray therapy and radium therapy, there was a decided decrease in size. However, six months later, roentgen ray examination of the chest revealed probable metastasis in the left lung. Death occurred shortly afterward. At the necropsy two

NORMAL RANGES FOR LABORATORY FINDINGS

By R. E. COLEMAN, M.B.

Vancouver

In response to a request we are here submitting a list of the "normal" ranges of body constituents as at present in use in the Vancouver General Hospital Laboratories. In using these the physician is reminded that the results of any laboratory analysis are but "a response to a technique," so that these "normals" are subject to changes of technique. For the same reason they may not be directly comparable in given instances with results from other laboratories.

Determination	Normal
Basal Metabolism	-10 to +15
Blood calcium, mg per 100 cc	10 to 11
Blood chlorides, mg per 100 cc	588 to 630
Blood creatinine, mg per 100 cc	1 to 2
Blood non-protein nitrogen, mg per 100 cc	25 to 35
Blood phosphorus, mg per 100 cc	3 to 4
Blood sugar, fasting, mg per 100 cc	80 to 110
Blood urea nitrogen, mg per 100 cc	12 to 15
Blood uric acid, mg per 100 cc	2 to 3.5
Spinal fluid, cells per cmm	0 to 5
Spinal fluid, chlorides, mg per 100 cc	725 to 740
Spinal fluid, sugar	about ½ blood sugar
Fragility	beginning at 0.44% complete at 0.36%
Phenolsulphonephthalein (P.S.P.) in two hours	60 to 85%
Red blood cells per cmm (men)	4,700,000 to 6,100,000
Red blood cells per cmm (women)	4,300,000 to 5,300,000
Hæmoglobin, per cmm (men)	83% to 106%
Hæmoglobin, per cmm (women)	71% to 92%
Colour index (men and women)	0.85 to 1.15
White cells per cmm	5,000 to 10,000
Platelets, per cmm	280,000 to 540,000

In the case of glucose curves, two hourly urine tests, and fat in the stools, the physician will find it more satisfactory to consult the laboratory staff since the normal range is not so easily expressed as are the above—*Bulletin of the Vancouver Medical Association*, 1928, iv, 286.

nodules of new growth were found in the left lung—*J. Am. M. Ass.*, June 23, 1928.

The Irradiation of Milk—Nearly two hundred delegates, representing forty-two countries, were present at the World Dairy Congress in London recently. During the proceedings it was shown that milk treated with ultra violet rays had proved its efficacy both as a preventive of rickets and as a cure. Dr. Wilhelm Hoffman, of Vienna, in a paper on "Activated Milk," said that from a prophylactic point of view the sale of a cheap activated milk to the masses was even more important than the direct treatment of the human body with artificial sunlight.—*Brit. J. Actinotherapy*, 1928, iii, 95.

Editorial

THE INTERNATIONAL CONFERENCE ON CANCER A GENERAL SURVEY

THE first International Conference on Cancer, convened in London by The British Empire Cancer Campaign, an event of momentous importance, has come and gone. It is now in order to take stock of what has been accomplished. The "practical" man would doubtless say, "Very little." Yet this would be a most unfair and unfounded conclusion. It may be frankly admitted at the outset that we are still as far from a comprehension of the nature and cause of cancer as before. This is not to say, however, that no progress was made. It was surely a great gain that experts should have gathered from different countries, to record experiences, to exchange ideas, and to devise more comprehensive ways of attacking the problem of cancer control.

For more than thirty years the cancer problem has been studied, but mainly from the laboratory viewpoint, and the solution is not yet. It is no depreciation of the splendid contribution of the research workers to say that it is not sufficient, and that light must be sought in other directions also. This was one of the conclusions reached by the Conference. Such matters as the influence of heredity, locality, occupation, diet and race in the etiology of cancer need to be more fully studied, and this can only be done by the laborious accumulation and scientific analysis of facts and more facts. This task calls for the united and co-ordinated efforts of local investigators, central health authorities and international bodies, such as The British Empire Cancer Campaign and the Cancer Commission of the League of Nations.

The discussion on Etiology was opened by Professor James Ewing, of Cornell University, along general lines, and was participated in by many eminent authorities. The parasitic theory of cancer production found an able champion in Professor Borrel, but apparently received a mortal blow from the work of Dr James B. Murphy and Professor

Archibald Leitch. The dramatic climax of the Conference was reached when Dr Murphy, of the Rockefeller Institute, announced that, working with the Rous chicken sarcoma, he had been able to isolate a growth-producing substance which he regarded not as a virus but as something of the nature of an enzyme. This substance, which he had obtained and purified by fractional precipitation of the proteins in an extract of the chicken tumours, was capable, when injected, of producing tumours in fowls with great regularity. The agent in question was more resistant to the action of ultra-violet rays than were bacteria and viruses. Dr Murphy thought it hardly conceivable that this active fraction, a substance purified by repeated precipitations, could carry with it through all the manipulations any living organisms or virus. The final and crucial proof, however, lay in the isolation of the same substance from material that certainly did not contain a virus. This he had been able to do. By a similar technique he had isolated from such normal tissues as the testes of normal fowls, which had not been in contact with any tumour-bearing animals, a similar substance with which he had produced the typical tumour, transplantable in more than ninety per cent of fowls. The work of Professor Leitch, of the Cancer Hospital, London, on the Rous tumour, carried out independently, tended to confirm Dr Murphy's conclusions.

These remarkable observations, while they do not solve the riddle of malignancy, yet probably indicate an advance in our knowledge, and open up a new biological problem of far-reaching significance. The prospect is alluring, but more work along these lines is called for before the final appraisal of the findings of Murphy and Leitch can be made.

On the engrossing subject of the value of lead in the treatment of malignant disease Professor W. Blain Bell, of Liverpool, read a paper entitled, "Chemotherapy in Malignant Disease" (*Lancet*, 1928, ii, 164) in which

he states his opinions very temperately. He believes that "there is a considerable body of evidence supporting the view that by itself lead, even in the crude preparations now used, can cause the disappearance and apparent cure of malignant neoplasms in favourable circumstances, and can sometimes beneficially affect leukaemia and other neoplastic conditions." Professor Bell also felt that the effects of radiation were augmented by the previous use of lead, and that the employment of lead as a prophylactic measure against recurrence after surgical operations for cancer will be held to be of great value. The discussion that followed was summarized by the Chairman Sir

Thomas Horder, when he said that it must be admitted that some patients have got well after treatment with lead and as a result of it. At the same time, the method was not so safe that physicians should assume the responsibility of advising their patients to submit to it, and that further research should be undertaken for lead preparations less toxic than those now in use, in the hope of widening the margin of safety at present dangerously small.

Perhaps the most immediately fruitful outcome of the Conference was the agreement of the members that radium was a valuable adjunct to surgery, and in certain cases had proved to be an efficient substitute for it.

RADIUM THERAPY IN CANCER

IT is difficult to completely appraise the results of the recent International Conference on Cancer, beyond saying that it has helped to co-ordinate our existing knowledge of cancer. This was stated in advance to be one of the purposes of the Conference, and appreciation of its value from this point of view was well expressed in the opening address by His Majesty the King when he said that if the discussions led to advance in diagnosis, treatment, or even palliation of the disease, the Conference would have justified itself and earned the gratitude of mankind.

The full benefit of this assimilation of knowledge belongs, however, to the future, for we still have not solved the vitally important problems of the causation of tumours and the nature of their growth, but there is one aspect of the cancer question, whose growing importance was emphasized by discussions at the congress, namely, the value of radium in comparison with surgery in the treatment of certain types and at certain stages of cancer.

The use of radium has now passed well beyond the experimental stage. Not only has research increased our understanding of the physics of the element, and consequently its therapeutic applications, but enough time has elapsed since its first employment to allow some estimate to be formed regarding its ultimate effects. We know, for example, that tumours vary considerably in their

sensitivity to radiation. Epitheliomata of the epidermis and of the oral region are specially sensitive, and their cure by radium may now be predicted with confidence. Cancers of the breast and of the cervix uteri are likewise sensitive to radiation, but treatment of these may be complicated by the degree of extension to deeper structures. On the other hand, rectal cancer is distinctly resistant to radiation, and adenocarcinomata of the uterus as well as that of other glands are likewise only slightly affected by radium.

If, however, research has defined the limitations of radium treatment there is conclusive evidence to demonstrate its value within those limits. There are now available for reference collected statistics whose analysis shows that the end results of radium treatment in the types of cancer mentioned, are, broadly speaking, as successful as those produced by surgical methods. This evidence is particularly plentiful in the case of cancer of the cervix uteri, one of the most exhaustive reports being that prepared by Dr Janet Claypon, based on data published in sixteen different countries, and relating to records in about 80,000 cases treated by radium or surgery (Pub. Min. of Health, 1927, xl). Heyman, of Stockholm, (*Acta Radiol.*, 1927, viii, 3637) has also published statistics along these lines from twenty surgical and seventeen radiological clinics in Europe and America.

In such cases, therefore, radium can be said to show at least as good results as surgery, but there are other considerations to be taken into account. There is, for example, no "operative mortality" from the use of radium, that is, a patient may be considered an entirely favourable operative risk, and yet in a large series operation produces a definite mortality percentage which is practically absent when radium is used, and, in addition, there is a small but definite proportion of cases classed as inoperable which have been successfully treated by radium.

It may be accepted, therefore, that, with certain qualifications, radium and surgery are equally effective in dealing with cancer, whilst in combination they may serve to considerably augment each other's scope. There is little doubt, also, that if it were more generally known that surgery is not the only treatment for cancer, there would be less hesitation amongst the laity in seeking medical advice at earlier stages of the disease, which is an essential condition for success with any treatment.

The chief difficulty in the use of radium is

the expense. It has been estimated that the cost of a quantity large enough to supply the probable needs each year in a country like Great Britain would be somewhere in the neighbourhood of a million dollars. This element of expense, together with the highly specialized technique required for its employment, brings the matter, as Sir Geo Buchanan has pointed out (*Lancet*, 1928, ii, 160), into the sphere of "public action," but even if this (not necessarily ideal) solution is not reached, there is still a very strong case for organized centralization. So far, radium treatment has been developed chiefly by the efforts of individual workers, carrying out observations on clinical results, but Professor Claud Regaud, the head of the first Radium Institute in the world, in the country in which radium was discovered, said at the Conference that he thought it would be a mistake to increase the number of centres for radium research, but that these should, as far as possible, be centralized. This is a matter which will depend to some extent on local conditions, but at present it would seem wise to develop a few centres to their fullest extent.

IS STATE MEDICINE IN THE OFFING?

CONSIDERABLE concern has, in the last four or five years, been shown in the United States on the subject of the growing scarcity of medical practitioners in the rural portions of the Union and also on the high cost of medical service in the cities.

Evidence of this concern was given in a communication from the National Grange, an organization that includes 800,000 members who are engaged in agricultural pursuits, addressed to the American Medical Association, and read at its meeting in Minneapolis on June the 11th. In this communication the Grange pointed out the ever-increasing scarcity of physicians in the small towns and rural sections in the Union. There were in 1906, it says, 33,000 in places of 1,000 inhabitants or less, but in 1926 the number had fallen to 27,000 and, further, one-third of the towns of 1,000 or less, throughout the United States, which had physicians in 1914, had none in 1925. From the fact that the

average age of death of physicians is 62, while the average age of rural doctors throughout the Union in 1925 was 52, it is predicted that the present generation of country doctors will have practically disappeared in another ten years. That the country doctor will disappear in a few years seems to be indicated also by the fact that only a very small percentage of those who have graduated in the last ten years have taken up the practice of their profession in rural districts, and as a result there are many scores of rural counties where not a single doctor who has received his degree since 1918 has settled. In consequence there are increasing hosts in the rural sections who are "medically helpless, while the cost of medical service, where it is to be had, mounts higher and higher."

That no relief for this situation will come from an increase in the number of those annually graduating as doctors is clear

The Commission on Medical Education has reported that the number of physicians in practice is actually decreasing, and that the number will not regain its present size, 130,000, until 1965. In the meantime the population of the country, the Commission estimates, will have increased from 115 millions to 165 millions.

One reason given for this decrease is, in the words of a Committee reporting last year at the Washington meeting of the American Medical Association, that "the medical profession does not attract so many qualified young men and women as formerly." This Committee also noted that a dangerous concentration of doctors in cities is taking place, leaving the rural communities without adequate medical service.

The National Grange believes that the cause of this growing scarcity is due to the greatly increased requirements for graduation, the increase from four to seven years to complete the curriculum, and the cost of a medical training \$7,000 to \$8,000 which must be borne by a young man, twenty-five or thirty years old, who, according to Dr. W. A. Pusey, a former President of the American Medical Association, "is not looking for an ordinary practice among ordinary people in the cities, or for any practice in the country."

The National Grange would change all this. It does not advocate a lowering of the standards, but more practical instruction, which may be acquired in less time and with the expenditure of less money than under prevailing conditions. It quotes the opinion of many physicians of the highest standing "that present medical education is not giving the most resourceful practitioners for ordinary service, it is producing practitioners who are dependent on hospitals and laboratories, while these facilities, according to authoritative medical opinions, are necessary in hardly more than ten per cent of illnesses and accidents." For the care of ninety per cent of the illnesses and accidents in rural sections independent resourceful physicians are needed. This ninety per cent of illnesses cannot be handled through distant doctors and hospitals. The National Grange believes that a proper medical training can be given a student in four years after he leaves the High School, instead of in the seven years now required.

The problem, according to the National Grange, must be solved by the medical profession. There has been, in the last twenty years, a decrease in the number of medical schools in the United States from 160 to 69. Many of those forced out of existence did useful service, while of those which remain nearly all receive large appropriations of public funds, but the direction and control of such has passed out of the hands of the people or their representatives. If the profession fails to remedy this situation, "it is for the people to determine whether it would not be good policy, as necessity demands, for the States to build and maintain medical schools solely under public control and responsive to the needs of humanity."

The response of the delegates to this communication from the National Grange was non-committal. In the discussion of it some of the delegates admitted the urgency of the need of more rural practitioners, but others maintained that the situation was not as serious as it was represented, and that there had been some improvement in it in the last few years, while another claimed that the problem is an economic one, but that it is true that the present system of medical education tends to specialization on the part of the profession and that it is difficult to induce the recent graduate to practice in a rural community, because he is instinctively tinctured with the idea that progress, that achievement, that personal advancement, can only be obtained through the medium of specialization or location in larger cities.

The Committee on Medical Education, which reported at this meeting of the Association, referred to the unrest with regard to rural medical service, to the expensiveness of medical service in general, and to the strong criticism directed at medical education from all quarters. It recommended that medical students should graduate and enter practice at an earlier age than at present, and that the medical course be reduced from four years of three quarters each to three years of four quarters each, and it expressed the opinion that the medical course is overcrowded with details and with detailed consideration of the specialties, and that it would be improved if it were much less crowded and more con-

fined to the essentials and the fundamentals. This report was unanimously adopted by the delegates!

In the discussion one of the delegates stated that the problem in this question is close to the heart of every one who is opposed to State Medicine, and another expressed the fear that one of the suggested solutions of the rural situation would lead to contract practice and incidentally put the stamp of approval on State Medicine.

In other quarters concern at the cost of medical service has been shown. A writer in the *Atlantic Monthly*, more than a year ago, dealt with this subject and pointed out that cases of midwifery in very moderately well-to-do circles now cost \$500.00, whereas twenty to thirty years ago they did not involve more than \$50.00. Dr. Wilbur, President of the Leland Stanford University, a medical graduate, impressed with the urgency of this subject, has organized a Committee on the Cost of Medical Care, to study and report on it. In a letter to the *Journal of the American Medical Association* which appears in the issue of June 30, he explains the reason for his action and refers to the widespread dissatisfaction of the public with the existing

situation in medicine, in doing so quoting from the *Journal of the Michigan State Medical Society* of 1922: "The tendency of the day is that where any group of citizens cannot afford to purchase certain privileges, services, or needed comforts, the demand goes forth that the State supply to them that which they cannot now obtain. The State and County usually comply with pressing demands of its citizens. We are fearful that we are on the eve of such a demand from the people. What are you going to do about it?"

Dr. Wilbur remarks that in the same year the President of the Ohio State Medical Association made a similar statement and asked a similar question, and that there have been in the last ten years many warnings like these, but the medical organizations have done little in regard to the problem, and that is why his Committee was organized.

It is evident that the situation in the United States is serious. Is State Medicine in the offing? What will the effect be ultimately on the status of the medical profession in Canada?

A. B. MACCALLUM

THE COST OF MEDICAL CARE

SOME months ago reference was made in these columns to a meeting held at Washington, at which it was decided to establish a committee to investigate the cost of medical care. This committee has now been formed with a total personnel of forty-two members. The Chairman of the committee is Dr. Ray Lyman Wilbur, President of Stanford University, and one of the few medical men to reach the distinction of appointment to the presidency of a large university.

Of Dr. Wilbur's Committee, slightly more than half hold medical degrees, and these represent various types of medical activity. Fourteen are private practitioners, while nine represent public health services. The remaining nineteen include eminent economists, representatives of various medical institutions and organizations, and a number who may be described as representatives of the

general public. Dr. Winslow, Professor of Public Health at Yale is Vice-Chairman of the committee, and Chairman of the Executive. Harry H. Moore, Ph.D., of Washington, has been chosen as Director of Study.

A number of institutions which are interested in health problems have subscribed liberally to the support of the program, which will be carried on over a period of five years. For the first year it is expected that the expenditure will amount to sixty thousand dollars, while for succeeding years not less than seventy-five thousand dollars will be required annually.

The committee has recently issued a booklet describing its proposed activities, and from time to time journal articles will be published reporting upon various phases of the committee's researches. The ultimate question to be faced is how can practitioners'

equipment and technique, required in modern medicine, be utilized for the most efficient production of service. How can general practitioners and specialists, laboratory services, and various types of therapy, be most effectively organized into unit agencies? And how can unit agencies and services, both private and public, be best co-ordinated into a well balanced program of preventive and curative medicine? It is, however, felt that this ultimate question cannot be dealt with until the fundamental facts are made available. The present program of the committee is therefore limited to three groups of studies

- 1 Preliminary surveys of data showing the incidence of disease and disability requiring medical services, and of generally existing facilities for dealing with them,

- 2 Studies on the cost to the family for medical services, and the return accruing to the physician and other agents furnishing such services,

- 3 Analysis of especially organized facilities for medical care now serving particular groups of the population

The cost of medical care has been giving concern to members of the medical profession for several decades. We have realized for years that the poor man and the rich man are on practically an equal footing, so far as getting the best of medical attention is concerned, but that the man of moderate means is not able to afford the various tests made in the x-ray and other laboratories which have become so notable a feature of present day medical practise. We have hitched uneasily as we have made out accounts in which our own services have been rated more highly than in former years, and have endeavoured to excuse ourselves because the medical course has been lengthened and made more expensive. We have felt genuinely worried when it has been necessary to send patients to hospital who have refused to enter other than the private wards, and when it has been necessary to insist on the employment of a trained nurse in the home, or of a "special" in the hospital, conscience has troubled us greatly. We have realized that the modern disposition to prescribe the newer, and particularly the synthetic, drugs has added materially to the

bills for medicines. So we are not unaware that the cost of medical care has been increasing rapidly, and that it has, in fact, become a serious burden to people of moderate incomes. To a certain extent only does it lie in our power to bring about any reform in the situation. We cannot control hospital fees, and nurses' fees. We can have little control over the fees of laboratory specialists, and our own fees must be such as to enable us to live. It is, therefore, rather disappointing to learn that the committee on the cost of medical care will not give particular attention to means by which the cost of medical care can be reduced. The committee has laid down a list of seventeen different subjects which it proposes either to study itself or to have some agency like the United States Public Health Service study for it. There can be no doubt that as a result of these studies we will have more exact knowledge than we now possess, but it is difficult to escape the doubt whether this will help us very much. We will almost certainly learn that all the blame for the increased cost of medical care cannot be laid upon physicians, but that a very considerable share of it is really attributable to those who complain most bitterly, persons whose incomes may be very moderate but who in case of illness will be satisfied only with what they regard to be the best of hospital accommodation and of medical and nursing care. The lady who got along comfortably a few years ago with fifty-cent cashmere stockings cannot to-day satisfy herself with anything but silk stockings at several dollars a pair, and must also have a motor car.

A very casual inspection of shop windows shows that it is not merely the cost of medical care which has advanced within recent years. We must pay more even for our corned beef and cabbage than we did a few years ago. The problem to which the committee has set itself thus has many angles, and it is not unlikely that the studies which have at present been set down will increase in number and perhaps may even closely approximate the number of varieties of food stuffs which a certain concern saves us the trouble of preparing. We may feel then that the committee has a large and difficult task. Just how useful its efforts may prove the future

alone can disclose, but the personnel of the committee leads us to believe that its deliberations will be safe and sane, and that

much that will be of practical use will come out of its studies

W. H. HATTE

THE CHEMICAL NATURE OF INSULIN

THE most definite means of ensuring chemical purity of a compound is its production in crystalline form. Three internal secretions have so far been so obtained, adrenine, thyroxine, and insulin. Adrenine, $C_9H_{13}NO_3$, with a molecular weight of 183, and thyroxine, $C_{15}H_{11}NO_4I_4$, with a molecular weight of 523 (65 per cent of which is due to four atoms of iodine), have, compared with starch, glycogen, and proteins, relatively small molecules. It is customary to consider that most of the internal secretions have such relatively small molecules. This would account for their easy passage through animal cellular membranes.

Until recently the most highly active insulin preparations were still amorphous in character. Investigators were forced to the conclusion that they were complex in character, corresponding to the protein derivatives termed proteoses. In 1926 Abel announced the preparation of insulin in crystalline form. Pyridine was used as the agent essential for the precipitation of impurities. Abel and his collaborators¹ prepared 0.53 gram of crystalline (rhombohedral) insulin from two grams of a commercial preparation evaluated at 13 international rabbit units per milligram. This gives some idea of the degree of purity of such solid amorphous preparations. The rabbit value of the crystals is at least 40, and possibly 60, units per milligram. That is, or e-fortieth (perhaps one-sixtieth) of a milligram of pure insulin per kilogram rabbit is sufficient to produce hypoglycæmic convulsions in this animal.

Abel and his colleagues, assuming that one sulphur atom is present in the molecule of insulin, obtained the empirical formula $C_{45}H_{75}O_{17}N_{11}S$, while du Vigneaud², working in Murlin's laboratory, proved that the disulphide linkage of cystine ($-S-S-$) must be present, whence the empirical formula must be at least $C_{90}H_{150}O_{34}N_{22}S_2$. This corresponds to a molecular weight of 2,146.

Three recent papers from Abel's laboratory

by du Vigneaud, Jensen, and Wintersteiner^{3, 4, 5} have amplified, but by no means completed, our knowledge of the chemical nature of the insulin molecule. They have shown that hydrolysed insulin crystals yield 8 per cent of cystine, 12 per cent of tryptosine, 4.4 per cent of histidine, 3.2 per cent of arginine, and 2.26 per cent of lysine. The total nitrogen, 15.6 per cent, and the amino-nitrogen, 12 per cent, are in agreement with the supposition that the insulin molecule is completely or almost completely, built up from amino-acid radicals, so that the residual 70 per cent must consist in large part of radicals of the simpler amino-acids. Tryptophane is absent. The radical of a second sulphur compound appears to be present.

Assuming the correctness of these figures, the 8 per cent of cystine represents a molecular weight of the order of 2700, if but one cystine radical be present, while if 4.4 per cent represents one radical of histidine the weight of the molecule would be more than 3500. In all probability the molecule is therefore at least twice as large as du Vigneaud's first estimate. It is certain that the molecule of insulin is vastly more complex than those of adrenine and thyroxine, and that insulin itself must possess the general properties of a proteose.

In view of the importance that cystine and the cystine derivative glutathione have been shown to play in metabolic processes involving oxidation, it is interesting to speculate whether the cystine radical of insulin plays some similar rôle in the functioning of that compound. Although the clinical preparations of insulin adequately meet therapeutic needs, the wider knowledge of the compound that is now being acquired may lead, through better understanding of its mode of action, to even better and more systematic methods of treatment of pathological carbohydrate metabolism.

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- 2 DU VIGNEAUD, *J Biol Chem*, 1927, **lxxv**, 393
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- 4 JENSEN, WINTERSTEINER, AND DU VIGNEAUD, *J Pharmacol*, 1928, **xxxii**, 387
- 5 WINTERSTEINER, DU VIGNEAUD, AND JENSEN, *J Pharmacol*, 1928, **xxxii**, 397

A. T. CAMERON

Editorial Comments

POST-GRADUATE COURSES IN ENGLISH AT PARIS

An innovation of much importance is about to be initiated in Paris by the Association for the Development of Medical Relations between France and Allied Countries, under the auspices of the Dean and the Medical Faculty of Paris. It is the establishment of a course of lectures and demonstrations in English in medicine, surgery, pædiatrics, ophthalmology, oto-laryngology, morbid anatomy, and operative work on animals and the cadaver. Some of the most prominent clinical men in Paris will collaborate with their assistants in conducting this course, such as Professors Emile Sergent, Antonin Clere, Armand Delille, Weill-Hallé, Antonin Gosset, Morax, and Lemaitre.

All are aware of the great prominence that Germany and Austria attained before the War in the matter of post-graduate courses in medicine. Vienna and Berlin attracted perhaps most of the English-speaking physicians from this side of the water, on account of their enormous clinical material, and the excellent systematized courses of instruction that were offered. Some of these courses were conducted in English. As a result, German ideals in medicine and German ideas in therapeutics were disseminated widely throughout Canada and the United States. While our French-Canadian confrères have always looked to Paris for their inspiration, the English-speaking physicians rarely did. Possibly, another reason for the attractiveness of the German schools lay in the fact that it was impossible for English-speaking physicians to get the same quality of work in the same space of time in England, where they would, naturally, have preferred to go. Now, however, things are improved. Post-graduate work of the highest quality can be obtained in England, under more favourable conditions than formerly, and there is less inducement to go to foreign countries. Nevertheless, it is of much advantage to get the points of view of our medical colleagues in foreign countries, and, therefore, we, in Canada, welcome this, the first serious attempt to interest English-speaking physicians in French clinical methods. Those of us living in the Province of Quebec, side by side with the French-speaking Canadians, are particularly interested in this movement to draw French and English medical men together. We wish it all

success. Our special thanks are due to Dr J. E. Dubé, Professor of Clinical Medicine in the University of Montreal, whose efforts, extending over the past two years, have at last been crowned with success, and to our contemporary *L'Union Médicale du Canada*, for its powerful aid.

The course in Paris will be given during the month of October, and the salient features of the program offered will be found elsewhere in this issue, (under "General News").

If we have any word of criticism it is that we doubt whether the month of October is the best time to stage this attractive curriculum. The university teachers, at least, will be greatly occupied at that time with planning their winter's work, and the practising physicians will have already taken their holidays, and will probably not wish to be away from home a second time. It is proposed, we understand, that the post-graduate course at Paris in English will be made an annual affair, if the first effort proves attractive enough. A better time than October, in our judgment, would be in summer or early spring. This is an important matter, as the success and continuation of the venture will in large part depend upon the attendance. The movement is a friendly gesture and is cordially commended to our readers.

BACTERIOPHAGE AS A FILTERABLE VIRUS

The above was the title of a paper read by Bronfenbrenner¹ before the New York Pathological Society in December.

The idea may at first seem novel, even revolutionary, yet Rivers² in his review of the subject of filterable viruses places bacteriophage first in his long table of known viruses and in fact thinks it is the best example of a filterable virus we know. This need not necessarily lead to the interpretation that bacteriophage is a living agent, as Rivers again is still undecided whether filterable viruses are living and certainly the clinching experiment proving this has yet to be done.

The most plausible explanation of the bacteriophage phenomenon is that suggested by Bronfenbrenner who thinks it is a metabolite produced during bacterial growth which stimulates the

micro-organisms This stimulation leads to accumulation of products in the cell and consequent water imbibition, the cell wall then rupturing from intracellular tension In other words bacteriophage may crudely be compared with such a cellular metabolite as carbon dioxide which is a stimulant in low concentration The essential property of bacteriophage is thus not *a priori* its property of destroying the cell, which is secondary, but its specific stimulating effect

Bacteriophage and the filterable viruses (the latter term being used here in its usually accepted narrow sense of those which attack plants, animals or man, with the following properties in common, *viz*, that they are filterable and invisible to ordinary microscopic vision, and have never been grown outside a living cell) both exhibit a marked specificity and the pathological changes produced by them are essentially the same Bronfenbrenner, by means of cinematographic films, has demonstrated the sequence of events taking place when bacteria are exposed to bacteriophage The micro-organisms first reproduce rapidly and increase abnormally in number, they then swell and rupture, the contents being extruded This is in essence the intracellular pathological change which Rivers has depicted in the case of the virus diseases of plants and animals The affected cells proliferate, increase greatly in size, then degenerate, and a vesicle is formed

It seems safe to assume then that the bacteriophage is a filterable virus, whatever this may be, and the whole chain of living cells which may be affected by these agents is now complete, from the lowest known unicellular plant cells, bacteria, up the scale to plants, insects, fish, birds, mammals and man

Perhaps these agents are after all "the intermediate form between life and death," as suggested by Professor Boycott in his address at the opening of the Pathological Institute at McGill University some years ago

- 1 BRONFENBRENNER, J J, Chapter in "Modern Advances in Bacteriology, etc," Jordan and Falk, Chicago University Press, 1928
- 2 RIVERS, T M, Filterable viruses, Williams and Wilkins, Baltimore, 1928

ARNOLD BRANCH

THE "TENNIS ELBOW"

Some little interest has been taken recently in the medical and surgical aspects of sport In a former number of this *Journal* (1927, xvii, 1324) there appeared an article by Drs L J Austin, and W A Campbell, of Kingston, on injuries of the knee due to playing football, and in the *British Medical Journal* (1928, i, 12), is one by

Mr G Percival Mills on the treatment of "Tennis Elbow" Quite recently, too, a considerable volume, covering the whole gamut of sport, has been produced by a German scientist, whose name has escaped us, dealing with the subject with German thoroughness

It may not be inappropriate, now that the days consecrated to sport are upon us, to consider the condition termed by Mr Mills "Tennis Elbow" This is a condition almost confined to tennis-players, golfers, and those who must constantly wield a hammer It comes on insidiously and there is seldom any history of accident or sudden strain The person affected can usually perform any movement with his arm without pain except one, which invariably causes pain During the acute stage the patient will often drop a teacup when reaching forward to take it off a tray This is often diagnostic A tender spot can usually be recognized just above or below the external epicondyle, and the pain can often be elicited by complete flexion of the wrist and fingers Mr Mills adopted the following procedure with success Under nitrous oxide anæsthesia, he flexed the wrist and fingers, fully pronated the forearm, and then forced the elbow into hyperextension, at the same time making firm pressure over the tender spot by the external condyle There may be heard a click or snap, or even a loud noise, under this manipulation, though often the snap can only be felt

In chronic cases part of the trouble may be due to adhesions, but it is hard to resist the conclusion, in the acute cases certainly, that something is out of place It is suggested that in acute cases a portion of the orbicular ligament may slip between the head of the radius and the capitellum

BIBLIOTHECA OSLERIANA

We have received word that efforts are being made to ship the Osler Library to Montreal before navigation closes Arrangements for the packing of it will commence early in September It is doubtful however if the catalogue will be ready by that date, but it is hoped that it may appear before the end of the year This catalogue is to a large extent annotated bio-bibliographically Many of the notes were made by Sir William Osler himself Seven hundred and fifty copies of the catalogue will be on sale We hope in our next issue to present our readers with a more detailed account of this most interesting library

ERRATUM

The footnote to the editorial on p 216 of the August issue should have read "Dr H H Murphy," instead of "Dr G H Murphy"

Special Articles

REPORT OF THE BRITISH COMMITTEE ON VACCINATION

The report of the committee appointed by the Minister of Health in Great Britain, in conjunction with the Medical Research Council, in February, 1926, to investigate certain problems which have arisen in connection with vaccination, is just issued¹. In it the committee reports on details of the preparation, testing and standardization of the lymph, as well as on the means taken to ensure its purity and freedom from other germs which might do harm and the most desirable and efficient method for performing the operation is discussed. An abstract of the report is herewith presented.

The lymph used at present in England for vaccination is prepared at the Government lymph establishment. The seed lymph employed there was derived from calf lymph received from Cologne in 1907, and its quality has been maintained by cutaneous passage through the rabbit. Transference from calf to calf was found to lead to deterioration in the lymph and unsatisfactory vesiculation. The report emphasizes the desirability of discovering some method of producing lymph absolutely free from extraneous organisms. Carrel and Rivers have shown that the vaccine virus proliferates when grown *in vitro* in contact with chick embryo cells, and that by this method the potency of the virus is greatly enhanced. It has also been found possible to inoculate rabbits by the intracerebellar route, and it is claimed that the product yielded is very considerable and suitable for human vaccination. Lymph produced by either of these processes it is claimed would be free from any contaminating organisms.

Experience shows us that, notwithstanding the great value of vaccination, certain risks do occur, though their percentage is very small. Certain recommendations made by the commission appointed, in 1889, to investigate the cause of these accidental occurrences made the following changes in their instructions—The age period for vaccination was extended to six months after birth, certain technical regulations were advised to ensure cleanliness and the avoidance of sepsis and erysipelas, tubes were recommended to be used instead of dry points, and the vaccinator was directed to render medical attendance in case of any illness supervening if asked to do so by the parent. As the result of these new instructions, a reduction in the number of fatalities following vaccination was immediately noticed. In the five-year period 1886 to 1891 in which 4,290,000 infants were vaccinated, there were 279 deaths at all ages. During the fifteen years from 1910 to 1925, 5,500,000 infants were vac-

nated, with only 128 deaths. The present report suggests that the system of inspecting the patient on the seventh day is not desirable, an inspection should be made at some time during the second week, and a second inspection should be obligatory in the third week. It recommends that the principle of stationary vaccination be adopted instead of the present system of domiciliary vaccination, and states that careful investigations made do not afford any evidence that vaccinia increases the liability to disease, either general or specific, nor does it appear to aggravate a disease already established.

In 1922, a few cases were reported in the medical press in which it was stated that a fatal encephalitis appeared to have developed as a sequence of a recent vaccination. In the following year, a larger number of cases occurred in which death was said to have been due to an attack of encephalitis following a recent vaccination. Investigation of these cases by a special committee showed that 11 cases occurred in London in the autumn of 1922, and a second group of 49 cases occurred in the summer of 1923, chiefly in provincial districts. Extensive investigations regarding these brought out the fact that the number of cases of post-vaccinal encephalitis bore no direct relation to the number of persons vaccinated, although there appeared to be an undoubted association in time between the post-vaccinal cases of encephalitis and the prevalence of vaccination throughout the country generally, charts showed, however, that the period of 1923, during which the majority of post-vaccinal cases occurred, was immediately antecedent to the development of an epidemic of poliomyelitis and polioencephalitis throughout the country. The committee expressed the opinion that it appeared extremely improbable that the cases could have been due solely to the vaccine virus, it was conceivable that a virus, such as that of poliomyelitis, which could only occasionally set up encephalitis in an individual in normal health, might, if another virus such as that of vaccinia was present in the brain, be enabled to do so. Evidence was not sufficient to declare the vaccine virus to be the sole cause of the disease, but the committee, after their investigation, considered that it was probable that the co-operation of some other organism besides that of the vaccinia existed in these fatal cases. Furthermore, it was stated that a condition similar to post-vaccinal encephalitis has occurred independently of recent vaccination or of the development of any observed exanthemata †.

¹Report of Committee on Vaccination. H. M. Stationery Office, pp 303, 18 appendices with charts, 7s net.

† Recent reports in the daily press state that the League of Nations' Health Committee has received information regarding the increasing frequency of the development of encephalitis lethargica after vaccination. The situation has become so bad in the Netherlands that compulsory vaccination in the public schools is said to have been suspended for a year.

The efficiency of the various methods of vaccination in producing complete immunity was investigated by Dr A F Cameron and Dr Brownlee at the beginning of the present century. Dr Cameron's conclusions were that protection against a fatal issue in an attack of smallpox was directly related to the number of scars and to the area of the cicatrix, and for all practical purposes the period of effective immunity may be regarded as not less than seven years.

The mild type of smallpox which has prevailed in Great Britain for the past five years has been benign, with an almost negligible mortality. As a result there has arisen a marked disinclination to submit to adult vaccination. It is affirmed that vaccination is worse than the disease, and that it is commonly possible to continue at work with little or no discomfort during an attack of this mild form, whereas abstention from work is generally necessary after vaccination. Owing to this fact, and in order to render vaccination acceptable without impairing its efficiency, the committee recommends that an effort should be made to reduce to a minimum the amount of trauma inflicted in vaccination. It considers that it is possible to secure success by a technique consisting of the infliction of a single linear incision, not more than one-fourth of an inch in length and strictly limited to the epidermis. If in this way we ascertain the smallest amount of virus sufficient to produce immunity it might be found possible to produce a vaccine which would cause less local and less general reaction than now frequently results.

ACCIDENTAL FATALITIES FROM INJECTIONS OF SERUM

By H E MACDERMOT, M D,

Assistant Editor

Montreal

There is more than one recorded instance of fatal results attending the administration of diphtheria toxin-antitoxin. In one series of cases at Baden, in 1923, the pure toxin was given by mistake, in another series at Dallas, Texas, there was an error in the mixing of the toxin with the antitoxin, in yet another, at Bridgewater and Concord, Mass., the toxin-antitoxin had been frozen and thawed before use, with consequent destruction of the antitoxin fraction. The investigations into these accidents clearly showed how they came about, and the results in each instance were such as might have been expected under the circumstances, but the latest occurrence of the kind in Australia presents somewhat unusual aspects. The events in brief were as follows*.

The public health authorities of Queensland had instituted a course of active immunization against diphtheria by the accepted method of

inoculation with toxin-antitoxin, and the work was begun in the city of Bundaberg by the local medical officer of health, in January, 1928. The serum used was prepared by the Commonwealth Serum Laboratories, Melbourne, and was distributed generally throughout the State. Its preparation had been in accordance with accepted methods, but for certain reasons it was decided not to add any antiseptic. To offset this, however, it was at first arranged to issue it only in sealed glass ampoules, each one of which would be a single dose, but later on the serum was sent out in rubber-capped bottles containing enough for several doses, thus involving the withdrawal of the material from the same bottle several times. A warning as to the absence of antiseptic in the bottles and the possibility of contamination of their contents by repeated withdrawal was issued, but was not given sufficient publicity, at all events, the information did not reach the medical officer at Bundaberg.

In the course of ten days a total of 31 children in Bundaberg were inoculated from the one bottle of serum, and at first nothing unusual was noted. But on January 27th, of 21 children who received toxin-antitoxin (13 of them for the first time, and 8 for the second time) 12 became violently ill within five to seven hours, and died in from fifteen to thirty-four hours, 6 developed severe but not fatal symptoms, and 3 remained perfectly well. The ages varied from one year and three months to nine and a half years.

In the subsequent inquiry by a Royal Commission there was some difficulty in collecting the precise information necessary to explain what had taken place. The clinical study of the cases had been admittedly incomplete. The blood had not been examined, there were no notes on the condition of the nervous system, no urinalyses had been performed, even the actual descriptions of the symptoms were vague and in some cases inexact. It is pointed out by the Commission that these defects were the consequence of local conditions which made it virtually impossible to do any more than was done to deal with the emergency. The facts as finally established, however, showed that in the fatal cases the symptoms had been sudden and overwhelming. They were practically the same in each, vomiting at the outset, soon followed by diarrhoea, but with no blood in the stool or bowel washing, fever which declined rapidly in those that recovered, extremely rapid pulse, with rapid, shallow respirations, and terminal cyanosis and convulsions. The children that recovered all developed abscesses at the site of inoculation, from which later on *S aureus* was cultured in five cases.

The pathological evidence was similarly incomplete, since no trained pathologist was available for examining the bodies, except in one case, and that was only after an interval of fifty-two hours. Autopsies were performed in nine cases, but there was no bacteriological examina-

*A comprehensive report is to be found in *The Medical Journal of Australia*, Vol. II, Nos 1 and 2, July 7th and 14th, 1928.

tion of the blood or other tissues, microscopical sections were not made, and what material was kept for later examination was not suitably preserved, and yielded but little information. Again, however, it was possible by careful analysis of the information available, for the Commission to reach fairly definite conclusions. In their opinion the post-mortem findings indicated an acute toxæmia of an unspecified nature.

The next step was the examination of the unused contents of the bottle of antitoxin, and here the most important evidence was obtained, since it was found that the material was heavily infected with *S. aureus*, identical with the form isolated from the local abscesses. The serum was undoubtedly sterile at the outset, and that it was possible to keep it so by careful sterilization of the cap before each puncture, and by not allowing long intervals to elapse between each withdrawal, was shown in the case of other practitioners who followed these precautions with the same stock bottles, and who had no mishaps, moreover bacteriological examination of these other bottles proved them to have remained sterile. The fatal inoculations had been performed with admittedly imperfect technique, in a room not specially free from dust, and with an electric fan keeping up a current of air. It was shown experimentally by the Commission that contamination of the bottle under these conditions could have occurred very readily.

Among the many interesting points raised by these facts we may refer to the extraordinary, if not unprecedented, rapidity with which the

symptoms developed after the injection, even granting that living organisms were in the serum. So striking was this feature that it was necessary to consider the possibility of death having been due to anaphylactic shock. This view, however, was set aside as not being in full accord with the facts: the symptoms had appeared on the first injection in some cases, and the interval between the first and second doses was too short in others, nor did the post-mortem findings point to a state of anaphylaxis. It is difficult also to see why there should have been such complete and uneventful recovery in some of the cases, except for the development of mild local suppuration. Metastatic abscesses were more to be expected, but even the blood cultures taken on the third and fourth days of illness were sterile, as was also the blood in the case of the one autopsy which was fully carried out, although late after death. Finally, three of the children showed no effects at all from the same doses (apparently) of living organisms as proved fatal to twelve others. The theory of variation in susceptibility may be invoked to account for the differing reactions, but this explanation must of necessity be used guardedly.

These unusual responses, however, added considerable weight to the belief that living organisms and their toxins were responsible, rather than the toxin-antitoxin itself. In the previous accidents quoted there had been marked and constant inflammatory infiltration of the tissues around the site of the inoculation, a feature which was present in none of the Australian cases.

Men and Books

JOHN HUNTER*

By THOMAS MCPHERSON, B A, M D, F R C S

Victoria, B C

John Hunter came of a very old Scotch family whose history goes back to the thirteenth century. He was born at Long Calderwood, a small estate near Glasgow. The house bears a tablet to the effect that he was born on February 13th, 1728. He himself observed the 14th as his birthday, and that is the day of the Hunterian oration at the Royal College of Surgeons. Probably he was born so late at night that they failed to notice whether he appeared just before or shortly after the clock struck twelve.

John was the last of ten children. The first three died in childhood, four others in the prime of life. James, the first son to grow up, died of phthisis at the age of twenty-nine. He was handsome and clever, and William Hunter used to say that he was the brightest of the family.

* An address delivered before the Victoria Medical Society, April 20, 1928, on the occasion of the Bi-centenary of the birth of John Hunter.

and if he had lived nothing could have prevented him from being the first physician in London. A sister, Dorothea, married the Rev James Baillie, afterwards Professor of Divinity at Glasgow, and had three children, Matthew, who became a famous physician in London, Johanna, who was the "Immortal Johanna," one of Sir Walter Scott's closest friends, and Agnes, whose claim to distinction lay in the fact that she lived to the very great age of 100. John's brother William, too, was one of the masters of medicine, and it was he who set John on his way. William started to read for the ministry, but changed his mind. For three years he lived with Cullen at Hamilton, helping with the uphill work of a country practice. In the summer of 1741 he went to London, where he became assistant to Dr John Douglas. In 1746 he began to lecture on the operations of surgery and on anatomy.

John, throughout his boyhood, was good at games and observant of nature, but idle and ignorant, a great disgrace for a Scotch boy whose father was a gentleman and whose brothers were studying law and medicine. He hated school books. When seventeen years old he spent a

few months in the timber-yard of his brother-in-law at Glasgow, but did not work and soon returned home. At twenty, he wrote to his brother William asking leave to come and work with him.

The two brothers began to work together in September, 1748. Their temperaments were very different. Reynolds has presented William as a fine gentleman, well dressed, carefully posed, his hands delicate, his features regular and remarkably handsome. In notable contrast is Robert Home's portrait of John Hunter in his working dress, a loose dissecting apron with long sleeves, the cuffs turned back, the garment caught about him with a single button. His attitude is clumsy and his features have none of his brother's good looks. They lack the fineness, but the whole face and figure are full of indomitable strength.

Fortune was favouring William. In 1748 he was appointed physician-accoucheur to the Middlesex Hospital, and the next year surgeon-accoucheur to the British Lying-in Hospital. John Hunter was studying anatomy, and for his lighter studies was seeing something of hospital practice. He was demonstrating to the students and doing the rough work, slaving all day, dissecting and putting up specimens. For two years he worked with Cheselden at Chelsea Hospital. In 1751 he became surgeon's pupil at St. Bartholomew's Hospital, under Percival Pott, whose simplicity of treatment and avoidance of officious interference had made him great in surgery. There was little hope of his becoming a member of the staff at St. Bartholomew's, so he later entered himself as surgeon's pupil at St. George's. He went for a time to Oxford, but left in less than two months. For five months he was sole house surgeon at St. George's.

About this time he began to study comparative anatomy, dissecting different animals, noting different forms and arrangements of organs, and observing them alike in health and in disease, in the hope that he might thereby acquire some knowledge of general principles.

His health was not good and in 1760 he was appointed staff-surgeon in the army. The appointment gave him change of work, a voyage, and an abundance of surgery, especially gunshot wounds. In 1761 he went with the fleet to Belle Isle, a small island off the coast of France, and the next year was staff surgeon in the expedition to Portugal.

William Hunter was hard at work in town. He held two hospital appointments, his private practice was one of the largest in London, and he was doing much literary work, but still found time to proclaim and protect his brother's discoveries in anatomy, among these being the lachrymal ducts and of the tubuli seminiferi in man, those relating to congenital hernia, concerning which there was much controversy with Percival Pott, the absorbent system, a new truth, second only to Harvey's discovery of the circulation of the blood. Over this there was a great deal of dispute with the Monros of Edinburgh

as to whom credit was due. Later, when the two brothers separated, a paper which John gave before the Royal Society on the structure of the placenta caused a lengthy dispute between them.

John Hunter returned from the Peninsula and started practice in Golden Square when he was thirty-five years of age. He was only one more surgeon amongst men of greater experience, including, particularly, Percival Pott. He had no hospital appointment and had been away for more than two years. Moreover, his passion for scientific work delayed his success as a surgeon and dominated the opinion which men had of him.

In 1764 he bought two acres of land at Earl's Court, and built himself a small house. Here he kept his animals and experimented on them. It is recorded that he used to wrestle in play every day with a beautiful small bull which he had received from the Queen. On one occasion it got him down and he was saved only by the accidental appearance of a servant who frightened the animal away. Again, two leopards broke from their confinement and got among some dogs, which they immediately attacked. The howling this produced alarmed the whole neighbourhood. Mr. Hunter ran into the yard to see what the matter was, and found one of them getting up the wall to make his escape and the other surrounded by the dogs. He immediately laid hold of them both and carried them back to their den, only later realizing his great danger. It was here, too, that he did many of his dissections and kept many of his specimens, for he was a most assiduous collector. A remarkable instance of this is recorded in connection with the Irish giant, O'Brien. Hunter was very anxious to get the skeleton of the giant and hearing that his health was bad had him followed. O'Brien, becoming alarmed at this, made arrangements that his body should be watched after death until a lead coffin could be prepared, in which he was to be buried at sea. After O'Brien's death Hunter got in touch in a public house with the men guarding the body and offered a bribe of £50 to be allowed to steal the body. He appeared eager and the watchers gradually increased their demands until they reached £500, which Hunter borrowed and paid them. He carried the body in his own hackney coach to Earl's Court where he himself prepared the skeleton.

In 1767 Hunter was elected a Fellow of the Royal Society, without having submitted to them any of his works. In the same year he ruptured his tendo Achillis by dancing. Following this he made experiments on dogs, dividing the tendons subcutaneously, and afterwards killing the dogs at different periods to observe the process of repair, thus foreshadowing Stromeyer's work in subcutaneous surgery. On September 9, 1768, he was elected surgeon to St. George's Hospital. This election was of infinite value to him, for a surgeon without a hospital is like a gardener without a garden.

The appointment also gave him the right to have house pupils. Soon after this he was made a member of the Corporation of Surgeons. When William Hunter moved from Jermyn Street to Great Windmill Street John took over the lease of his brother's house in Jermyn Street and moved into it from Golden Square, thus acquiring a good house in a fashionable part of London, near the hospital and already known as a doctor's house.

In July, 1771, John Hunter, at the age of forty-three, married Ann Home. The first child was named after his father. Another son and a daughter died in childhood, and there was another daughter, Agnes. The son John went to Cambridge, entered the army and became a colonel. Neither Agnes nor John had any children. Mrs Hunter was beautiful and clever and took her place high in society. She was the friend of clever people. She wrote "My Mother Bids Me Bind My Hair," and also the words for Haydn's "Creation." In 1772 Mrs Hunter's young brother, Everard Home, became the house pupil of Hunter, and much of our information about Hunter comes from his writings.

The following year Hunter had his first attack of serious illness. He describes this himself fully, and in the *Lancet* of February 18th, 1928, there is an article by Dr John A. Ryle suggesting that this illness was due to thrombosis of the coronary artery, with infarct of heart. He was free until 1776 from further attacks and after this had long intervals of freedom, but towards the last had pain every day.

In 1773 he gave his first course of lectures on the Principles of Surgery. The labour of preparing and delivering these magnificent lectures was very heavy. There was nothing like them in London, for their comprehension of the whole circle of the sciences round surgery. The fee for this course of nearly one hundred lectures was four guineas, making the cost to the hearer but ten pence per lecture. In 1776 he was appointed Surgeon-Extraordinary to the King, his brother having been for twelve years already a member of the household. William Hunter died on Sunday, March 30, 1783. In his will he did not so much as mention his brother John, showing the bitterness of their estrangement.

Many of John Hunter's pupils afterwards became famous. Amongst them were Sir Astley Cooper, Abernethy, Physic of Philadelphia, Cline, and Edward Jenner. Many letters from Hunter to Jenner have been published. These all show the intense interest which Hunter took in all kinds of life, cuckoos, hedgehogs, eels, salmon, bats, trees, porpoises, fossils and many other things. There is also a letter written a few months before he died to a friend in Africa, asking about swallows, ostrich eggs, camels, cuckoos, and the like.

In 1783 his lease in Jermyn Street came to an end. His collection had outgrown that building, so Hunter bought the lease of a large house in Leicester Square. He also bought ground be-

hind it, running to what is now Charing Cross Road, and at a cost of about £6000 erected his famous museum. There is a tradition that Stevenson drew from these premises his picture of the house and museum of Dr Jekyll. From now on his health was bad. He suffered almost daily attacks of pain. Latterly, these were brought on by the slightest exertion. He gave up the use of wine. Earlier, he had been a heavy drinker. About this time Sir Joshua Reynolds painted the portrait of him which is in the possession of the Royal College of Surgeons. Hunter was a bad sitter, but one day he fell into deep thought. Reynolds turned the canvas he was working on upside down and sketched a new head between the legs of the figure he had already painted. On the occasion of each Hunterian Oration this picture is hung opposite the audience and above the orator.

In 1788 Percival Pott died, and Hunter was now undoubtedly the head of his profession. His consultations were more in fashion than any other surgeon's and his range of practice more extensive. The next year Hunter succeeded Mr Adair as Surgeon-General and Inspector-General. His health became worse and worse. He was growing old, more from illness than from years. He had given up his lecturing, which was carried on by his brother-in-law, Mr Home. For the first fifteen years following his appointment Hunter worked fairly well with his colleagues at St George's, but from that time on he began to have disputes with its surgeons, on the ground that they were not doing enough for the pupils of the hospital. In this year, 1783, the proposal was made by Hunter, or at least supported by him, that a medical school should be created, after the model of the Guy's Hospital School, and that each surgeon should give six lectures on surgery. It was not approved by Hunter's colleagues, for reasons which for the most part seem to have been dictated by a feeling of opposition to Hunter, and not by any valid grounds of argument.

In 1793, the year of his death, Hunter declared that the entrance fees of pupils should no longer be divided equally among the surgeons, and that he would keep for himself the fees of those who entered under him. Whether he wanted the money, or whether he thought by this plan to force his colleagues to do more teaching we do not know. The three other surgeons appealed to the Governors, and there was much argument for and against. The Court of Governors decided against Hunter. That autumn two young men came to be admitted to the hospital under him without certificates that they had been "bred up to the profession" and Hunter promised that he would nevertheless ask the Board to let them enter, bringing up their case at the next meeting on Wednesday, October 16th. On the Wednesday morning he saw one of his friends and told him what was to happen at the meeting. He said he was sure there would be a dispute and it would be the death of him. He went into the

workrooms and told his resident pupils some droll stories and left the house in good spirits, whistling a Scotch air. The meeting had already begun when he reached the hospital. He presented the memorial from the young men and spoke on their behalf. One of his colleagues flatly contradicted something he had said. Then came the end. Angina seized him, he turned toward another room to fight out his pain by himself, and Dr. Matthew Bailhe followed him. He went a few steps, groaned, and fell into Dr. Robertson's arms and died.

Hunter's work had been multitudinous. He was anatomist, biologist, naturalist, physician, surgeon, and pathologist, all at once and all in the highest degree.

In person he was five feet, two inches high, strongly built, and toward the end of his life somewhat corpulent, his shoulders were broad and high, his neck very short, he was uncommonly strong and active, compactly made, and capable of great bodily exertion. His hair was of a reddish tint, afterward grey, at last white, his eyes were light. He dressed plainly and not always neatly.

In consultation he was deliberate and of many words. With his patients he made no mystery of their cases and enjoyed illustrating them from the natural history of lower forms of life. He was fond of quoting the names of distinguished patients. There are many stories of his generosity. He was especially kind to poor artists and to poor doctors. He loved his home life and liked his friends to call him by his Christian name.

He had a habit of saying, "I cannot tell at present what to recommend. I must think of it." To Astley Cooper, who asked with surprise whether he had not the year before stated an opinion on some point directly at variance with one he had just put forth, he replied, "Very likely I did, I hope I grow wiser every year," and to the same purport he answered another of his pupils who asked whether he had not written so-and-so, "Never ask me what I have said, or what I have written, but if you will ask me what my present opinions are, I will tell you." Again, "You had better not write down that observation, for very likely I shall think differently next year." And, finally, let me remind you that it was Hunter who said, and the saying dominated his whole life, "Don't think. Try."

The Dosage of Drugs—In his preface to the new (nineteenth) edition of *The Extra Pharmacopoeia* Dr. W. Harrison Martindale raises an interesting point about the dosage of new drugs. He remarks that in the case of many of the important and powerful drugs that have been introduced in recent years the dose originally recommended has been found by experience to be dangerously high, and he pleads for more care in the application of results derived from animal experiments to the calculation of doses suitable for therapeutic use. This is a very timely warning, and everyone will agree with the opinion of a scientist whom he

LINACRE'S INFLUENCE ON ENGLISH MEDICINE

"Thomas Linacre (1460-1524), the prototype and father of the scholar physicians in this country, exerted a lasting influence on medicine by founding the Royal College of Physicians of London in 1518, and brought the spirit of Greek learning into the intellectual life of the country. By his will he also established lectureships at the two older universities, but unfortunately these did not fulfil the intentions of the pious founder, for example, at St. John's College, Cambridge, the lectureship became a college appointment and largely a sinecure, twenty years ago, however, the character of the office there was changed, and a distinguished leader in medicine was appointed each year. In 1908, as the first lecturer under the new regulations the late Sir William Osler gave an account of Thomas Linacre's life, of his activities as a medical humanist and a grammarian, and of the history of the Cambridge foundation, in 1913 the late Sir Norman Moore discoursed in his inimitable manner on "The Physician in English History," and on May 5th last Sir George Newman read an essay, both learned and delightful, on Linacre's influence on English medicine, which has just been attractively printed for private circulation as a pamphlet of 37 pages. Though the subject is much the same as Sir William Osler's it is treated on different lines, and the reader realizes that these two scholarly essays are complementary to each other. Going to Italy with a scholastic grounding in the classics, Linacre brought back to England a living comprehension of the service which pure Hellenism could render to English medicine, of the essential importance of Aristotle, and of the necessity of a re-orientation of medical knowledge as transmitted by the Arabs. In conclusion, Sir George Newman points out that, although Linacre and his pupil Sir Thomas More knew that the future well-being of the English nation lay with simple methods of prevention, this practice is still widely disregarded. Readers of the author's book of essays, *The Interpreters of Nature*, published last year, will naturally hope that in its second edition the Linacre Lecture of 1928 will be included"—*Brit Med Jour*, 1928, ii, 25

quotes as saying, that in the case of a new drug "the clinical trial, properly conducted, ought to involve a research as careful and elaborate as the preliminary laboratory demonstration of a promising activity"—*Brit M J*, 1928, ii, 262

An Anticipation of Listerism—"It is not necessary, as modern surgeons teach, that pus should be generated in wounds. No error can be greater than this. Such a practice hinders Nature and prevents the agglutination of the wound"—*Theodoric of Bologna, Bishop of Cervia*, (1205-1295)

Provincial Association Notes

PROVINCE OF QUEBEC MEDICAL ASSOCIATION

The annual clinical day of the Province of Quebec Medical Association will be held in Sherbrooke, on Tuesday the 18th of September next

The forenoon will be devoted to clinical and scientific work, the afternoon to social functions

A special committee has been appointed to entertain visiting ladies who may accompany members

During the evening there will be a banquet, followed by the annual general meeting of the Association, during which will be discussed subjects of interest to the profession in general

The registration fee of \$2 00 includes membership in the above Association

PRELIMINARY PROGRAM

- 8 00 a.m. Clinics in the different hospitals of the city St Vincent de Paul General Hospital, King Street (east), Sherbrooke General Hospital, Park Avenue (Tramways of the Park Lane), Hôtel Dieu, Bowen Street (south) (Tramways of the Newington Lane)
- 10 30 a.m. Inscription at the St Vincent de Paul Hospital, payment of the annual fee to the Province of Quebec Medical Association, admission cards to the night banquet.
- 11 00 a.m. Lectures in the large Reception Hall of the St. Vincent de Paul Hospital (3rd floor, Administration Building)
Lecturers Doctor C Jeannin, Professor at the Medical Faculty of Paris, France, will speak on "Eclampsia."
Doctor F H Lahey, Chief of the Lahey Clinic, of Boston, Mass, U.S.A., will speak on "Abdominal surgery and the general practitioner"
- 1 00 p.m. Luncheon at the St Vincent de Paul Hospital
- 2 00 p.m. Automobile trips to the Little Lake Magog (9 miles from Sherbrooke), and North Hatley (15 miles from Sherbrooke)
Fishing, bathing, golfing, etc., etc.
For the Ladies Bridge and tea at the "Country Club," organized by Mrs (Dr) Gordon Hume, Dr J A. Darche, Dr F Bertrand, Dr J A. C Ethier, Dr H C Cabana.
- 6 00 p.m. Automobile tour of the city
- 7 00 p.m. Banquet at the Magog House, Dufferin Avenue.
Orators Doctor C F Martin, Dean of the Medical Faculty of McGill University, Montreal
Doctor L de L Harwood, Dean of the Medical Faculty of Montreal University, Montreal
President Doctor Gordon Hume
- 9 00 p.m. General meeting in the Magog House Lobby or at the City Hall
- To be discussed Bill of the Canadian College of Surgeons and Physicians, Health certificate before marriage, Workmen's Compensation Act of the Province of Quebec, etc., etc
All members of the Province of Quebec Medical Association can join in the discussion
- 10 30 p.m. Annual reports of the Secretary and

Treasurer, with remarks by the General President, Doctor Stevenson of Quebec City
Elections

11 00 p.m. Smoking (Grill Room of the Magog House)

PRINCE EDWARD ISLAND MEDICAL ASSOCIATION

The annual meeting of the Prince Edward Island Medical Association was held in Charlottetown on July 11th. The morning session began at 10 30, with the President, Dr J C Houston, in the chair

After the routine business was disposed of, the following communications from the Canadian Medical Association were considered

1 *Re* Lister Day

The Prince Edward Island Medical Association will celebrate this event each year in a fitting manner

2 *Re* Membership Fees

The Association is favourable to the suggestion that the fees be collected in October instead of January

3 *Re* Venereal Disease as an impediment to marriage

After considerable discussion it was decided to refer this matter to the Medical Council of the Province.

Touching reference was made to the death of Dr James Warburton, who was one of the oldest and most respected physicians of the Province

Dr S R Jenkins, President of the Canadian Medical Association, congratulated the different committees on their splendid work, and their almost perfect organization, which had as a result the staging of one of the most successful meetings of the Dominion Association

Regarding the fifty-ninth meeting the writer of these notes has had many letters of appreciation from our guests on that occasion, particularly stressing the wonderful hospitality of our Island people. While all these expressions were satisfying and welcome, one fact stands out prominently, and seems the most important of all, namely, that the work of the committees received the praise of the officers of the Association, who not only expect but demand efficiency when the success of this important meeting is at stake

The following officers were elected for the ensuing year —

President, Dr E E Sinclair

Vice Presidents, Drs Preston McIntyre, J B Champion, and James Walsh

Treasurer, Dr I J Yeo
Secretary, Dr G F Dewar
Auditors Drs W McKenzie and G L Smith
Executive Committee, Drs W J McMillan, I F McNeill, and B C Keeping
On the Canadian Medical Association Council, Drs I J Yeo, H D Johnson, and W J McMillan
Editorial Board, Canadian Medical Association Journal, Drs W McKenzie and J A McPhee
Medical Council of Prince Edward Island, Dr S R Jenkins (Registrar), Dr I J Yeo (President), Dr G F Dewar (Treasurer), Drs H D Johnson, W J McMillan, E T Tanton, and J F McNeill

PRESIDENT'S ADDRESS

The President, Dr J C Houston, in delivering the annual address, took as his subject "Examination of the urine and its aid in diagnosis."

He said the examination of urine was not a very pleasing occupation, and the general practitioner is often tempted to be satisfied with a few easy tests done in a rather careless manner taking as little time as possible. Very often, if there are no symptoms of disturbed kidney function, he neglects or forgets to ask for even a single specimen, and a twenty-four hour specimen would be far too much trouble.

He emphasized the importance of a routine examination, for in this way many obscure cases can be correctly diagnosed. He instanced a case which had been treated for pulmonary tuberculosis and which, under suitable hospital treatment and careful examination of the urine, turned out to be a case of pus-kidney. Another case was admitted to the hospital with a history of Bright's disease, which on careful examination of the urine, and x-ray, turned out to be a case of calculus in the ureter with a large dilated kidney.

Dr Houston outlined the method of routine examination of the urine as practised in the Prince Edward Island Hospital, and showed that it must be so exact that any disease which has its origin in the kidney can be eliminated.

One cannot do justice to this excellent paper in a brief synopsis. It was felt by all present the President had chosen a very timely subject for his annual address, one which was of real practical value to the practitioners of the province.

The speakers at the afternoon session were Dr Grant Campbell, of the Alexandria Hospital, Montreal, and Lecturer in Medicine at McGill

University, and Dr J R Goodall, of the Royal Victoria Maternity Hospital, Montreal, and Clinical Professor of Gynaecology and Obstetrics at McGill University.

Dr Campbell first considered measles, which next to small-pox is the most infectious of the contagious diseases. He went carefully into every phase of the disease from the incubation period to convalescence, also noting the most serious complications.

He then addressed the meeting on the modern treatment of scarlet fever. He went very minutely into special treatment such as antitoxin, and also spoke of the complications of this important disease. His papers, for which he received the thanks of the Association, were of a very high order.

Dr Goodall's first address was on pelvic infections, which he divided into two groups: (1) Those independent of pregnancy; (2) Those connected with pregnancy. He went carefully into the causation, course and the most suitable treatment to adopt.

Dr Goodall next dealt with eclampsia. He explained the preventive treatment for this dread disease, the symptoms, course, and the treatment of the attack were described in detail.

The Association thanked Dr Goodall for his very instructive papers.

The Prince Edward Island Medical Association appreciates the kindness of the Canadian Medical Association in sending such excellent lecturers to address its meetings.

G F DEWAR

BRITISH COLUMBIA MEDICAL ASSOCIATION

At the first meeting of the new Executive of the British Columbia Medical Association, held after the annual meeting in Victoria, chairman of standing committees were elected as follows: Dr M W Thomas, Victoria, Legislative Committee, Dr J H MacDermot, Vancouver, Industrial Service Committee, Dr W T Ewing, Vancouver, Constitution and Credentials Committee, Dr D G Perry, Vancouver, Publicity and Educational Committee, Dr J W Albuckle, Vancouver, Ethics and Discipline Committee.

"In writing, therefore, such a natural history of diseases, every merely philosophical hypothesis should be set aside and the manifest and natural phenomena, however minute, should be noted with the utmost exactness. The usefulness of this procedure cannot be easily overrated, as compared with the subtle enquiries and trifling notions of modern writers, for can there be a shorter, or indeed any other way of coming at the morbid causes,

or discovering the causative indications, than by a certain perception of the peculiar? By these steps and helps it was that the father of physic, the great Hippocrates, came to excel, his theory being no more than an exact description or view of nature. He found that nature alone often terminates disease, and work a cure with a few simple medicines, and often enough with no medicines at all."—Sydenham (1624-1689)

Medico-Legal

MEDICAL COMMUNICATIONS

We are indebted to the *Manitoba Medical Bulletin*, June, 1928, for the following notes on a Supreme Court decision re medical communications.

"In giving judgment in an appeal before the Supreme Court of Canada in February last the Court had to deal with the communication by a physician of information supposed to have been obtained by him under the seal of professional confidence from a patient. The facts were briefly as follows:

Dr M in 1924, as assistant chief medical officer of a railway company, was investigating a claim for workmen's compensation by H, due to an attack of iritis which permanently affected H's vision. In 1920 H had been a patient of Dr M. In the course of his inquiries as such medical officer, Dr M wrote, among other things, to another physician referring to H: 'He also stated that he had had g.c. infection about 1918.' H brought action for damages for libel against Dr M. At the trial the judge held that in fact H had not informed Dr M that he had suffered from the malady mentioned. The trial judge's decision was reversed by the Appellate Division and H's action was dismissed. On appeal by H to the Supreme Court of Canada that Court decided in favour of H, and found that there was no adequate ground for disagreeing with the finding of the trial judge, that H's account of his interviews with Dr M should be accepted and that the entry in Dr M's notes on the subject of g.c. infection was the result of an error."

The following are quotations from the majority judgment of Mr Justice Duff in the Supreme Court:

"We are not required, for the purposes of this appeal, to attempt to state with any sort of precision the limits of the obligation of secrecy which rests upon the medical practitioner in relation to professional secrets acquired by him in the course of his practice. Nobody would dispute that a secret so acquired is the secret of the patient, and, normally, is under his control, and not under that of the doctor. *Prima facie*, the patient has the right to require that the secret shall not be divulged, and that right is absolute, unless there is some paramount reason which overrides it. Such reasons may

arise, no doubt, from the existence of facts which bring into play overpowering considerations connected with public justice, and there may be cases in which reasons connected with the safety of individuals or of the public, physical or moral, would be sufficiently cogent to supersede or qualify the obligations *prima facie* imposed by the confidential relation.

The general duty of medical men to observe secrecy, in relation to information acquired by them confidentially from their patients is subject, no doubt, to some exceptions, which have no operation in the case of solicitors, but the grounds of the legal, social or moral imperatives affecting physicians and surgeons, touching the inviolability of professional confidences, are not, any more than those affecting legal advisers, based exclusively upon the relations between the parties as individuals.

It is, perhaps, not easy to exaggerate the value attached by the community as a whole to the existence of a competently trained and honourable medical profession, and it is just as important that patients, in consulting a physician, shall feel that they may impart the facts touching their bodily health, without fear that their confidence may be abused to their disadvantage.

Considering the present case from all these points of view, I am unable to agree that the duty of a chief medical officer of an industrial concern, for example charged with investigating a claim made by an employee for compensation under the Workmen's Compensation Act, and in preparing the evidence, is so 'situated' that 'it,' to use the language of Blackburn, J, in *Davies v Snead* (1), 'becomes right in the interests of society that he should tell,' for the purpose of securing information in preparing his case, the facts he has confidentially ascertained from the claimant as his personal medical adviser, or that he is under a duty recognized by people of 'ordinary intelligence and moral principle,' to divulge such facts without the assent of the patient.

There was no duty resting upon the respondent, and no interest committed to his charge, of sufficient weight and importance to require that the libels in question, involving the disclosure of professional confidences should be protected in the 'general interests of society.'"

Correspondence

The Edinburgh Letter

(From our own correspondent)

There has been an alarming increase in sickness and disablement claims in Scotland under the National Health Insurance Act. This is a matter of serious importance to the various Friendly and Approved Societies who have to meet these claims. Each year has been worse than the preceding year. It was thought by many that the large expenditure in 1926 under this heading was due to the effect of the coal strike, and that it was merely a temporary phase, but that explanation is no longer adequate to account for the still rising tide of claims. In 1925, the amount spent upon sickness and disablement benefit was £1,570,000, in 1926 it was £2,020,000. Taking disablement benefit alone, the expenditure in Scotland has practically doubled in the last four years. Sir James Leishman of the Scottish Board of Health, in addressing a conference of members of the Approved Societies in Edinburgh recently, drew attention to these figures. He pointed out the interesting fact that while the bill for disablement benefit is increasing, the figures do not represent a growing decline in the health of the working population. As a matter of fact the health of the community has been good, the death rate of 13.5 per thousand being almost at its lowest. Sir James Leishman suggested that a more probable explanation is that the increase in the sick benefit is to a certain extent due to lax certification by doctors. Most of them no doubt are doing their duty by the Act fairly, but even a small minority of the doctors, particularly in the industrial areas by granting certificates on inadequate grounds can cause a considerable increase in the figures. Sir James mentioned that in Northern Ireland, where experience has also been bad, nine doctors had been put off the panel within the past four months, and he added that it might be that in proved cases of persistent lax certification a like procedure would have to be adopted in Scotland. But the Societies can also help by a more effective supervision of cases, and by greater use of the medical referees. Nobody desires that good claims should be rejected, but, as Sir James Leishman said, the Societies should be careful of doubtful ones, while as trustees they are bound to refuse all bad claims.

"An inquiry into Post-Operative Tetanus, a Report to the Scottish Board of Health by T. J. Mackie, M.D., Professor of Bacteriology in the University of Edinburgh" has just been issued. Dr. Mackie in his conclusions and

recommendations says "At the present time there is no control by any health authority over the manufacture of surgical catgut liable to carry dangerous bacterial spores and intended for introduction, sometimes in large quantity, into the tissues. The same control as that now exercised, under the Therapeutic Substances Act, by the Ministry of Health (in England) and the Scottish Board of Health over the manufacture of vaccines, antisera, and certain other biological products, should be applied to catgut, such control would assist and guide manufacturers of surgical catgut in standardizing their methods and safeguarding their products. Under the Act referred to, rigorous sterility tests are demanded in the case of antisera, vaccines, etc., there is the same need for bacteriological control tests of catgut supplied in sealed tubes and "guaranteed" to be sterile. When catgut is supplied in the form of dry strands these should be free from sporing anaerobic bacilli of direct intestinal origin—e.g., *B. Welchii*. At the same time, surgeons and others who undertake the responsibility of preparing these strands for operative use should ensure that their methods of sterilization and technique of manipulation, storage, and distribution are such as to yield a perfectly sterile product."

The 33rd annual meeting of the Church of Scotland Deaconess Hospital (Lady Grisell Baille Memorial) was held recently. This hospital is situated in the Pleasance, formerly a charming residential area, but now a less salubrious locality. The institution contains 50 beds, and provides treatment for medical, surgical and gynaecological cases. During the past year there has been an increase of 99 in the number of cases treated, and the total of 782 is the largest in the history of the institution. In regard to out-patients the hospital has been over-run. People come from all parts of the city and the neighbouring counties to obtain advice and treatment. The Deaconess Hospital is unique in Scotland, if not in Great Britain, as it is the only hospital administered by a church. It was instituted for the twofold purpose of ministering to the sick and the suffering, and also as a place of training for those women who are going to devote their lives to missionary work in this country and beyond the seas. Both these aims have been amply maintained in the past, and we can still claim that the Deaconess Hospital has a very real and honourable position among the charities in Edinburgh. The hospital has always been fortunate in obtaining the services of some of the most celebrated physi-

cians and surgeons in Edinburgh. The late Dr G. A. Gibson, Professors Alexis Thomson and F. D. Boyd, were formerly members of the hospital staff, as was W. T. Ritchie the present professor of medicine in the university.

An extension to the Stornoway Hospital, Lewis, has just been opened. Lewis is the largest and most important of the Outer Hebrides, and together with Harris the population numbers 32,000 people who are scattered over a wide area. Until the advent of the motor car medical practice was undertaken under conditions of great difficulty. To this day the superstitions of a former day still linger in the ministrations of hereditary healers and bone setters. Until recently the local people looked upon a hospital merely as a place in which to die, and avoided it as sedulously as a prison, an asylum or a morgue. There has been a hospital in Stornoway since 1896. This old hospital was enlarged in 1920 to contain about 20 beds. Owing however to the superstitious dread of the people it was never fully occupied. In 1924 with the financial assistance of the Scottish Board of Health under the Highlands and Islands Medical Service Act, a consulting surgeon was appointed. Recently a further grant has made it possible to enlarge the institution along the most modern lines of diagnosis and treatment. A modern x-ray plant, with a complete apparatus for screening and photographing, has been introduced, as well as a light treatment department, where mercury-vapour lamps for artificial sunlight treatment will be installed. Under the present arrangement the Medical Officer of Health for the island, who lives in Stornoway, acts as an anaesthetist. In 1923 which was the last year in which the old arrangements were in force, less than 100 cases were admitted to the hospital. In 1926 with the enlarged surgical service 375 patients were treated and 350 operations performed. There were also more than one thousand out-patient attendances. Surgery in Lewis may still be said to be in its infancy and conditions are reminiscent of a mainland hospital twenty-five years ago. The people have not yet realized how much can be done by early treatment. Cases of cancer for instance are frequently admitted when all chance of a successful operation is past. The removal of enlarged tonsils and adenoids in children, until recently, was seldom carried out. It is only to-day that complicated midwifery cases are beginning to find their way into hospital. With this new and improved surgical service, the dread of the hospital is becoming completely removed, and the whole medical outlook of the people in the island is being changed.

Mr A. A. Scot Skirving, C.M.G., has retired from the Staff of the Edinburgh Royal In-

firmary. Mr T. M. Millar, F.R.C.S., has been appointed in his place.

GEORGE GIBSON

23, Cluny Terrace, Edinburgh

The London Letter

(From our own correspondent)

The ninety-sixth annual meeting of the British Medical Association was held in Cardiff during last month and a very large and representative gathering took place. The Association had visited Cardiff forty-three years before, and the President, Sir Ewen Maclean, Professor of Obstetrics and Gynaecology in the Welsh National School of Medicine, in his address recalled some of the work of the Association at and since that meeting in 1885. It is difficult to summarize in a brief paragraph any of the valuable discussions concerned with the organization of the Association or with the various subjects brought up in the scientific sections but two things do stand out by reason of their novelty. In the first place there was a proposal brought forward that the British Medical Association should become a full member of the "Association Professionnelle Internationale des Médecins" (A.P.I.M.). The Council had decided against this, but the meeting expressed itself by a majority in favour of supporting such a body and instructed the Council to take the necessary steps. The other subject which roused a great amount of interest concerned the proposed paying centres for infant hygiene. Mothers of the middle and upper classes, it appears, are beginning to look with longing eyes on the care and counsel obtained by their poorer sisters at infant welfare centres and desire a similar sort of clinic for themselves. Those who took part in the discussion seemed very frightened at what appeared to be yet another encroachment upon private practice and the meeting approved of urging mothers of these classes to stick to the family doctor. There are experts who prophecy that a state medical service is not very far distant. The general practitioner, as represented at Cardiff, is going to prove a bit of a difficulty it seems, and it is interesting to speculate whether, in terms of industry, he ought to be nationalized or rationalized.

One of the most important international conferences on cancer ever held has just concluded its meetings in London, when delegates from abroad to the number of over one hundred met more than two hundred of their British colleagues. One is constantly being told in the daily press that the solution of the cancer problem is to be obtained by putting a vast number of experts in a position to work uninterruptedly at various parts of the field and then after a period of time pooling their results.

Such a conference as has just been held does in reality represent just such a program as the newspaper writer brings forward as a novel idea. It is not belittling the immense amount of work which the organizers have done, nor the importance of the majority of the discussions held, to say that the problem of the causation of cancer is not much nearer solution as a result. This is not intended as a cynicism, the point is that facts are accumulated almost day by day and what is badly wanted is a fresh interpretation of them. At the conference Dr J W Murphy, of New York, described the results of his recent work which seemed to show that in cancer the "agent" was some endogenous chemical substance rather than an extrinsic living virus. Other speakers also negatived the claims of Gye and Barnard with regard to a cancer virus and yet this was hailed with great shouts only a short time ago. More hopeful were the discussions on treatment and there does now appear to be a well established technique for the use of surgery combined with radium which holds out increasing chances of success. For all that no spectacular advance was announced, the conference was undoubtedly of great value in promoting the interchange of ideas between experts of different countries.

In May, at a "social evening" held at the Royal Society of Medicine, Mr P B Tustin gave an interesting lecture on the production of clean milk and recently the Eighth World's Dairy Congress was held in London, so that milk has certainly been very much before our

eyes. The Congress was attended by more than two thousand delegates representing forty-two countries, and considerable interest was shown in the various papers and discussions. The control of the milk supply is a problem which faces many countries; the cost of control, it was generally agreed, should be borne by the state, since, as Sir George Newman put it, the dairying industry is not a trade but a service for health. It is very misleading at the present time to have "Grade A" milk and "Certified" milk both on the market for the public is attracted by the former as being better than the latter. It was strongly urged that all milk, except that from tubercle-free cows should be pasteurized but the clean milk versus pasteurization controversy still goes on with unabated vigour. The delegates from this country were interested in various figures about the consumption of milk in the form of ice-cream. It appeared that in America in 1926 about three gallons of milk per head of population were consumed under this heading. It is agreed that the milk consumption in the British Isles is much too small, as was emphasized by Mr Walter Guinness, the Minister for Agriculture at the opening session, and perhaps it might be increased by such a side line as ice-cream. Meanwhile a certain chocolate firm is trying to help with its slogan "Eat More Milk."

ALAN MONCRIEFF

London, August, 1928



Faculty of the Severance Union Medical College, Seoul, Korea
1 Dr D B Avison 2 Dr N Found 3 Dr O R Avison (President) 4 Dr S H. Martin

To the Editor *

I take pleasure in enclosing an article which may be of interest, from which you can take extracts for the *Journal* as it shows some of the work that is being done by Canadian physicians in Korea.

The enclosed photograph of the Faculty has in its group Dr D B Ayson of Toronto, son of the President, who is Superintendent of the

* An abstract of the article to which Dr Martin refers will be found under "General News." The *Journal* is pleased to be remembered so pleasantly by its friends and to form a link of union between the members of the profession in far off lands and their Canadian acquaintances (Ed)

Hospital, and also Professor of Paediatrics, Dr Norman Found, also of Toronto University, head of the Department of Pathology, and Dr S H Martin, Professor of Medicine, a graduate of Queen's University. If you could manage to put in the enclosed photograph, we would greatly appreciate it because of our many friends in the Canadian medical profession.

With all good wishes for the fine work which you are doing,

Sincerely yours,

S H MARTIN, M D

Seoul, Korea

April 19, 1928

Topics of Current Interest

PROTECTION FROM X-RAYS AND RADIUM EMANATIONS

At the second International Congress of Radiology held in Stockholm in July a series of recommendations by the British X-Ray and Radium Protection Committee, for the protection of workers in Radiology, were unanimously adopted by the delegates of the countries represented. These recommendations are of the greatest importance to every institution in our country that operates an x-ray machine, and should act as a guide in the planning of future installations as well as a check on present faulty installations. This synopsis will include only the most important items, the more technical portions being left for a study by the directors of each department.

Because it is well known that prolonged exposure to x-ray or radium causes definite and permanent injuries to the superficial tissues and derangement of the internal organs and changes in the blood, it is recommended, first, that the working hours of a full-time employee in x-ray departments be limited to seven hours a day for five days a week, the off-days to be spent as much as possible out of doors, second, such workers should have at least one month's holiday a year, thirdly, all x-ray departments should be situated on or above the ground floor level. All rooms, including dark rooms, should have large windows to admit sunshine and sufficient air whenever possible. All rooms should be provided with exhaust ventilations sufficient to change the air ten times an hour. All x-ray rooms should be decorated in light colours. X-ray rooms should have a minimum floor space of two hundred and fifty square feet. Dark rooms should have a minimum of one hundred square feet. Ceilings should be not less than eleven feet high.

The x-ray operator should place himself in a position as remote as practical from the x-ray

tube and in the shadow of the target. The x-ray tube should be surrounded as completely as possible with protective material of adequate lead equivalent. In the case of x-ray therapy, the operator should not be in the same room, and should also have a protection of two millimetres lead equivalent. Fluoroscopic screens should have the protection of 15 millimetres lead equivalent. Screen examinations should be conducted as rapidly as possible with minimum intensities and small apertures. Fluoroscopic screens should be flanked if necessary by lead impregnated diaphragms. As a protection against scattered radiation protective gloves should be worn and should be lined with fabric or chamois leather.

The floor of the x-ray room should be a non-conductor of electricity, such as wood, rubber or linoleum. Overhead systems should be coronaless and at least nine feet high. All metal apparatus should be sufficiently earthed.

A STANLEY KIRKLAND

DISEASES OF THE CORONARY ARTERIES*

"Sir Thomas Lewis, President of the Medical Section, who took the chair at the opening session of this section, said that the generalization associating a man's age with his arteries should be limited more particularly to the cerebral and coronary vessels. The discussion about to be opened was timely in view of the recent growth in knowledge about this subject, and it might be recalled that rather over a century ago a small group of men in the counties bordering Wales had contributed materially to the little that was then known.

* Abstract of a discussion that took place at the Cardiff meeting of the British Medical Association, July, 1928.

Dr G A Allan, in opening the discussion, said that disease of the coronary arteries had been recognized for a considerable time, and its association with angina pectoris had been widely accepted. In recent years prominence had been given to certain anginoid symptoms which had been found associated with coronary blockage, usually thrombosis. In this country the papers by McNee and by Gibson had helped to focus attention on the subject, but Lindsay Steven had made a careful analysis of the literature as far back as 1887. Coincident with this increased attention to the clinical aspect important anatomical investigations had been made by Gross and his collaborators, in addition to making an accurate survey of the part of the heart supplied by each coronary artery he had also shown that the heart was perhaps the richest organ in the body as regards capillary and pre-capillary anastomoses between branches of the same artery as well as between branches of both arteries, and that as age advanced there were anastomoses between the vessels in the epicardial fat and adjacent parts and the coronary arteries. The morbid processes affecting the coronary arteries might be classified into four clearly defined conditions: (1) Atheroma, the commonest primary lesion, was a patchy disease first affecting the deeper layers of the intima with degeneration of the deeper parts, proliferation of the fibrous elements, and encroachment on the lumen of the vessel. It was quite irregular in its distribution through the body, and might be well marked in the coronary vessels when there was no indication of it in the accessible arteries. (2) Arteriosclerosis, a diffuse process characterized by thickening of media and intima, probably beginning as a hyperplasia in the media, it was much more uniform in its distribution than atheroma. (3) Syphilis was comparatively rare in the coronary vessels in spite of the fact that aortic syphilis was one of the commonest visceral manifestations of the disease. (4) Calcification was most frequently found superimposed on either atheroma or arteriosclerosis, but it might occur as a primary medial degeneration, and its association with atheroma was a potent factor in diminishing the lumen of the vessel. To obtain some idea of the relative frequency of these lesions he had examined the figures collected from 1,000 consecutive autopsies in the Western Infirmary, Glasgow. In these there were 371 cases in which naked-eye lesions had been noted, the lesions were —

Atheroma	80.6% with fibrosis in 51.2%
Arteriosclerosis	45.3% with fibrosis in 54.7%
Calcification	10.8% with fibrosis in 77.5%
Syphilis	3.5% with fibrosis in 38.0%

Of 97 cases in which the coronary lesion was noted as producing definite narrowing of the lumen —

Atheroma	was present in 85, with fibrosis in 82%
Arteriosclerosis	was present in 31, with fibrosis in 84%
Calcification	was present in 33, with fibrosis in 85%
Syphilis	was present in 7, with fibrosis in 57%

Fifty-eight of the patients died suddenly, and in ten of these there was no evidence of fibrosis. Other points which emerged from this study were: (1) severe narrowing of the artery might be present without obvious myocardial lesion, (2) severe old-standing lesion and even occlusion might be present with no clinical history of its occurrence, (3) patients might die with symptoms suggesting coronary occlusion in which no such lesion was found. Disease of the coronary arteries in general tended to produce diminution of the lumen, thus caused starvation of the parts supplied, followed by replacement fibrosis, or, if sudden complete occlusion occurred, infarction resulted with subsequent fibrosis. It was apparent that there could be no diagnostic symptomatology to cover all cases of coronary artery disease, in the series quoted 35 per cent of cases showed no gross lesion of the muscle, and of the remaining 238 only 58 patients could be said to have died as the immediate result of the coronary lesions. When the blockage was abrupt certain features were present with such regularity as to make diagnosis reasonably sure, these would be dealt with by subsequent speakers. The features that demanded attention were the duration and situation of the pain, the associated symptoms such as vomiting, collapse, respiratory and mental distress, and such signs as the rate and rhythm of the heart, fall of blood pressure, etc., and the information to be derived from the electrocardiogram. The ultimate prognosis was in almost all cases bad, but judging from old lesions found at necropsy, those who made a good recovery, at least temporarily, must be fairly numerous.

Dr Carey F Coombs (Bristol), discussing the etiology of the two great coronary syndromes, ischaemia and infarction, gave an analysis of 1,600 cases of organic heart disease seen during the previous ten years. Both kinds of coronary attack occurred most often in the seventh decade of life, though ischaemia cordis was almost as frequent in the sixth, and appreciable in the fifth, partly owing to its relation to syphilis. Infarction was relatively more common in males than was ischaemia. Dr Coombs showed a slide indicating that cardiac rheumatism, ulcerative endocarditis, and cardiac syphilis seldom excited the coronary syndromes, except that ischaemia was more frequent in cardiac syphilis in consequence of the liability of the coronary orifices to stenosis in aortic syphilis. Some coronary disorders might, however, be traced to endocarditis lenta, and even a preceding phlebitis.

Dr Ivor Davies (Cardiff) commented on the importance of symptoms in disease of the coronary arteries, and referred especially to

intermittent peripheral arterial claudication. Coronary sclerosis might be considered as a generic term to include angina pectoris and coronary thrombosis (*Brit M J* 1928 ii 198)

EARLY DIAGNOSIS IN MEASLES

Nearly eight years ago Prownke¹ observing that measles mortality is largely confined to the early age groups, advocated a concentration of effort toward the protection of young children. The idea was revived by Godfrey² in this country in 1926. In May of last year W. S. C. Copeman³ presented to the Royal Society of Medicine a method of securing this protection by the careful utilization of convalescent serum in patients under 3 years of age, apparently quite unaware that even as he read his paper a successful demonstration of something like his scheme was in actual progress in the city of Syracuse, N. Y. Both plans stressed the importance of educational publicity and of conserving the serum for children under 3 years of age. In the Syracuse work Drs. Ruhland and Silverman⁴ made an additional point of some importance in stressing the value of early diagnosis. When the serum is given during the first four days after exposure, the proportion of patients who are completely protected is greater than when the serum is given in the second four days. True, the difference is not great and if serum is given in the first week the measles attack will, in any case, be 'modified'. True, also, some authorities believe that it is desirable to modify the attack rather than to prevent it altogether, so as to confer on the patient a more or less lasting immunity. But it must not be forgotten that, as the delay in giving serum increases, so also must the dose increase. The remedy is so precious that this point cannot be overlooked. Early diagnosis means early attention for the patient as well as for the contacts, and this must materially affect the prognosis. As a result of their publicity campaign, calling attention to the possible significance of malaise, slight fever and catarrhal symptoms, Ruhland and Silverman were able to show that in nearly 90 per cent of cases a physician was called on or before the fourth day of illness. Obviously, if physicians are to see patients so frequently in the pre-eruptive stage of the disease, early specific signs become of increasing importance. The appearance of a 'measles line' (a line of congestion across the conjunctiva of the lower lid) shortly after the onset of fever has been described by Stimson.⁵ Still more recently, Wadsworth and Misenheimer⁶ have reported that, by the use of ultra-violet rays, the rash itself may be detected for from thirty-three to seventy-six hours before it becomes visible by ordinary light. It may be hoped that, as the attention of the

pre-eruptive stage, still further aids to confident diagnosis will be forthcoming." *J Am M Ass*, 1928 xci 176)

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A TEST FOR PREGNANCY

"All will agree with Dr. A. C. Siddall* that a simple and satisfactory test for the presence or absence of pregnancy would be most valuable, not only to the obstetrician, but also to every general practitioner. He remarks that at present perhaps the best known test for pregnancy is that of Abderhalden, but he agrees with Smith and Shipley, who tried to bring it within the realm of practicability, and concluded that it is of no value for the diagnosis of pregnancy. He mentions the verdict of De Lee that the epinephrine glycosuria test, Kammtz's phloridzin test, the dextrose test, and Fahraeus's red blood cell precipitation test are merely of academic interest, and also the statement of Hunt and Long that no laboratory method has yet been devised which is absolutely and infallibly diagnostic of the presence or absence of pregnancy, with the exception of radiological examination in the later months. Experimental work in this field has been hitherto dominated by two ideas—namely, that pregnancy causes a specific protein (ferment) to appear in the maternal blood, and that during the early months of gestation there is a tendency to glycosuria. Siddall suggests a test, however, which is based on a different idea from these. Early in 1926 he advanced the hypothesis that if the enlargement of the uterus and breasts of a pregnant woman is due to the presence of a hormone in the circulation, then corresponding changes should occur in the uterus and breasts of a test animal which had received injections of blood from the pregnant female, whereas the blood from non-pregnant women should give negative results. Binz, in 1924, had observed that, after injecting female mice with the blood of pregnant women, a transverse enlargement of the mouse's uterus resulted, and this result was confirmed towards the end of 1926 by Trivino and Fels. Franck and his co-workers, in a series of papers dating from 1926, have also demonstrated the presence of the female sex hormone

* A. C. Siddall. A Suggested Test for Pregnancy, based on the Action of Gravid Female Blood Serum on Mouse Uterus. Preliminary Report *J Am M Ass*, February 4, 1928.

in the circulation, not only during pregnancy, but also during the menstrual periods. These results seem to indicate that the blood of non-pregnant females might also have some effect on the uterus of the test animals. Siddall's observations, however, show that this is so small as not to invalidate his method as a test for pregnancy. His test animals were immature non-castrated virgin female white mice of less than 20,000 mg weight. One cubic centimetre of the patient's blood serum is injected subcutaneously into an immature virgin white mouse once daily for four or five days. On the sixth day the animal is killed, the weight of the mouse is divided by the weight of the uterus *plus* ovaries, and the resulting ratio provides the criterion for a positive or negative conclusion, a ratio below 400 being positive and a ratio above 400 being negative for pregnancy. Fifty-seven patients were submitted to this test, of twenty-six pregnant patients, twenty-five gave a positive mouse test, while of nineteen non-pregnant patients eighteen gave a negative mouse test, and twelve were incomplete cases. Such evidence requires confirmation in a larger series of patients with controls, and it is to be hoped that further information will be forthcoming." (*Brit M J*, 1928, 1, 952)

NORMAL WEIGHT AND WORKING EFFICIENCY

By MAY R. MAYERS, M.D.

"The maintenance of a normal weight is one of the best indications of good health. A healthy worker is an efficient worker and one who is less liable to meet with accidents. Have you weighed yourself recently, and compared your weight with the normal weight for your age and height? If not, you should do so at once. Indeed, you should do this every six months at least for your weight is in many ways an excellent indication of your state of health. If you are more than ten pounds heavier than you should be for your age and height you should do something about it—and the sooner the better. Persons who are overweight are more subject to diabetes, kidney trouble, high blood pressure and many other diseases than other people. Also the necessity for carrying about the excessive weight is a constant and unnecessary strain upon the heart. It is very important that you do not weigh too much.

The very best way to reduce is to get more exercise. This increases the number of calories which your body expends during the day, and frequently if one gets enough exercise, one can reduce without limiting one's diet at all. In order to lose weight, the expenditure of calories by the body must be greater than the number of calories supplied to the body in the form of

food. Consequently, in many cases, it is quite sufficient to increase the amount of exercise which one takes, and eat a perfectly normal diet in order to reduce. In the case of those whose work is essentially physical, it is not desirable that the exercise be further increased. Such persons, if they are more than ten pounds overweight should restrict the number of calories in their daily intake of food. They are eating too much for them. Each person is a law unto himself. What is too much food for one person may be insufficient for another. Each person must work out the question for himself, and find out what his individual needs in this direction are.

For those who require less food, it is usually best to restrict the number of calories per day to from 1,400 to 1,500. But remember that your diet must at all times be a balanced one. In selecting your day's menu follow the general principles which have already been explained to you. These principles apply quite as well to a reducing diet as they do to a normal diet. You should have plenty of fruit and vegetables. These are relatively low in calories and you can eat a great deal of this type of food without eating too many calories. Have at least two glasses of milk a day, regardless of anything else. These foods will in a general way supply you with all of the salts and vitamins which you require. Then fill in the remainder of your 1,400 or 1,500 calories in any way that you wish. It does not make any difference whether you eat fattening foods like bread and butter and potatoes or not, provided your *total* number of calories is not too high.

Much is said about foods which are fattening and foods which are not fattening. All foods are fattening if you eat too much. No single food will make you fat if the total number of calories in your food for the day is not too high for your personal requirements. One of the greatest dangers of reducing is the fact that when people reduce they usually eat a diet lacking in the important elements—particularly the salts and vitamins. A diet such as suggested above will protect you from committing this mistake. You will reduce on it, but you will feel well at the same time. This is not always the case at the present time with people who are "dieting" to reduce.

Remember also that it is not wise to lose weight too rapidly. You should not lose more than two pounds a week. If you are losing more rapidly, it is a sign that you should eat more. If you are not losing at all on such a regime you should consult a physician. Do not use medicine or baths to reduce unless under supervision. These may run you down if you do not succeed in reducing. Your case is one of the many. Your glandular make-up is only a physician can handle.

The following menus will show you that you can have attractive and inexpensive meals, and plenty to eat and yet reduce—because you will not be eating more than 1,400 calories of food per day. These menus are merely suggestive however. You can make up any number of additional ones yourself by putting together 14 or 15 of the 100 calorie portions listed in the *Industrial Hygiene Bulletin* for June, 1926.

Sample Diets for Reducing

1,400—1,500 CALORIES

DIET No 1

Breakfast

	Number of Calories
$\frac{1}{2}$ grapefruit and sugar	150
1 roll	100
1 pat of butter	100
Coffee with cream and sugar	100

Lunch

Lettuce and tomato salad	100
1 slice of bread	100
$\frac{1}{2}$ pat of butter	50
Tea with sugar	50

Dinner

Chicken, small portion	100
Gravy	50
Cooked vegetables, average portion	100
Small potato	100
1 slice bread	100
1 pat butter	100
1 glass of milk	80

Total 1380

DIET No 2

Breakfast

Juice of one small orange	70
1 egg	100
1 glass of milk	80
1 roll	100
$\frac{1}{2}$ pat butter	50

Lunch

Cream cheese, 1 tablespoonful	100
Crackers (3)	100
Jello (usual portion)	100
Iced tea with sugar	50

Dinner

Roast lamb, ordinary portion	200
Small potato	100
Peas, ordinary portion	100
Small piece of pie or cake	100
Fruit, salad, 1 teaspoon French dressing	150
Coffee with cream and sugar	100

Total 1500"

(*Industrial Hygiene Bulletin*, New York, 1928, 11, 41)

PROFESSIONAL DISCIPLINE

"Much interest has been aroused in Alberta in the Professional Discipline Act passed at the recent session of the legislature. Whatever else may be said, it undoubtedly has the distinction of originality, as no similar legislation has prob-

ably ever been enacted in any part of the English speaking world.

The Act sets up a Board, none of the members of which need be a professional man, which has very extensive disciplinary powers over the practitioners of any profession or calling listed in the schedule to the Act. The Board has power to act as a court of appeal from the decisions of the governing bodies of the professions concerned, and has also authority to originate proceedings. It can make its own definitions of professional misconduct and is not to be bound by established rules of evidence. Needless to say, the introduction of the bill caused a storm of protest from the legal, medical and dental professions, all of which passed very strongly worded resolutions denouncing it as an unjustifiable discrimination against the members of the professions concerned. Particular objection was taken to a clause which prevented any appeal to the courts from the decision of the Board. The Government yielded to representations on this point and struck out the section, but when the bill made its final appearance in the House, it was found that the same result had been achieved by adding to another section a few words which declared that the decision of the Board should be final. The schedule to the Act has been left blank, so that up to the present it is inoperative. At any time, however, the Government may, by order-in-council, apply it to any profession or calling it desires.

The consensus of legal opinion in the province is that the legislature, in its desire to put teeth into the act, has over-reached itself and defeated its own ends. One section provides that in all matters within its jurisdiction, the Board shall have all the rights and powers of the Supreme Court of Alberta. It is contended that this constitutes the Board a court and its members judges, and that, as judges can only be appointed by Ottawa, the appointment of the Board by Edmonton is unconstitutional. If the act is brought into operation, this question will doubtless be fought through to the Privy Council.

* * *

The Act described by our correspondent has caused more than a local stir amongst members of professions concerned, and if or when it is applied, it will probably attract even wider notice.

We might add here that there have been no grounds of complaint against professional governing bodies on the score of laxity or excessive leniency. In a remarkably large number of cases handled by them in the past, appeals to the courts have been successful and both doctors and lawyers have felt that the judges have been too lenient. As a result of this, the branches of the Law Society, during the recent session, secured amendments to the Legi-

fession Act, which allow an appeal to the courts from a decision of the branches in matters of discipline only when the branches have not been unanimous. Rightly or wrongly, the feeling

does exist that the courts have been too lenient towards offending members of the learned professions" (Supplement to the *McGill News*, 1928, ix, 3)

Abstracts from Current Literature

MEDICINE

Recent Changes in Our Views Concerning Diseases of the Lungs Myers, J A, *Minnesota Med*, 1928, xi, 465

The diagnosis of diseases of the chest has undergone many changes in the last few decades, due largely to the aid of the x-ray and the laboratory. In addition to these, however, we have also learnt more regarding physical signs. We now recognize a definite relationship between rigidity or atrophy of the chest muscles and disease of the lungs. The anatomy of the upper part of the chest is being taken into account, especially the differences between the two sides as regards the relations of various structures to the apices, the right apex, for example, comes into direct contact with the trachea, whilst on the left side the subclavian artery intervenes. Again, there is usually a slightly heightened percussion note over the right apex because the superior vena cava and right innominate vein lie in front of the medial part of the apex, this also accounts for increased tactile fremitus, increased transmission of whispering and a broncho-vesicular type of breath sounds on this side.

The failure to consider these facts probably accounts for the belief that the right apex is more often affected with tuberculosis than the left, Dr Myers thinks that if steroscopic films were taken in a sufficiently large series of cases it would be found that one side was not more liable to infection than the other.

Perhaps the most valuable development in auscultatory examination is the method of eliciting râles by having the patient take a deep breath, exhale, and then just at the end of expiration cough and inhale deeply. This will bring out râles which are otherwise not detectable.

The x-ray, amongst its many other advantages, has told us much about the healing of even advanced tuberculosis of which we were formerly ignorant. It also has shown us that definite areas of pneumonia may appear and disappear in a few days without the manifestations on which we are apt to become dependent. The x-ray examination in Dr Myer's opinion "must be regarded as part of the general examination and as such we are compelled to recognize it as second only to the finding of

tubercle bacilli." It is indispensable in the diagnosis of tuberculosis of the tracheo-bronchial glands in children.

On the laboratory side we have learnt that there are numerous non-pathogenic acid-fast bacilli which may be mistaken for tubercle bacilli. One negative sputum examination means nothing, the bacilli may be found after fifty successive negative examinations. It must be remembered that much sputum may be swallowed, especially in the case of women and children, and the stomach contents and stools should therefore be examined also. Injection of a guinea-pig should be resorted to on occasion. Other pathogenic organisms should always be sought for as well.

Some obscure cases may be immediately cleared up by a bronchoscopic examination, such, for instance, as small tumours projecting into a bronchus, stenosis of the bronchus, and foreign objects not detected by the x-ray. Then the injection of iodized oil has come to the front both for diagnosis and treatment. There are signs that a more balanced view is being taken regarding its employment, particularly since it has been shown that the oil may remain in the lung over long periods.

Perhaps the greatest number of mistakes in diagnosis of pulmonary disease are due to our not making careful systematic examinations on all patients, no matter how trifling the symptoms may be. And yet it is the patient whose disease is soonest detected in whom treatment is most effective.

H E MACDERMOT

Post Encephalitis and Its Problems Parsons, A C, *Proc Roy Soc Med*, 1928, xxi, 8.

It is only ten years ago that encephalitis lethargica began to be recognized in Great Britain as an inflammatory disease of the brain, sometimes acute, at other times subacute or chronic, prolific in its manifestations, disabling if not fatal in its results, difficult to diagnose and almost defiant as to treatment and prognosis. Something has been learnt of its epidemiology but the way in which it has spread and its relatively high incidence in Great Britain are still unexplained. Its cause is unknown, and attention is now being chiefly focussed upon the consequences and how to deal with those disabled by it, since no effective treatment of the

disease has been discovered. It is true that it accounts for less ill health and disablement among the population than does influenza, for example, or measles, or venereal disease, but in proportion to the few attacked it probably has a higher disablement and death rate than any other disease except cerebro-spinal meningitis. The death rate is calculated to be between 35 and 40 per cent, and as far as can be determined, about 40 per cent of the patients become disabled in some degree.

A broad classification of sufferers from the after effects of encephalitis shows the following three groups: (a) those suffering mainly from physical sequels, such as the very frequent Parkinsonian syndrome, (b) those who chiefly show mental deterioration (and it is probable that the mental processes are affected in all cases, either in the primary attack or subsequently), (c) those exhibiting demoralizations, or changes in conduct, results which are especially common in children.

The problem now is to deal with these disabilities, suitable institutional accommodation must be provided for the progressive physical disabilities (which are often combined with mental failing) and there should be general re-training and education of the youngest children, and training and control of adolescents with serious character changes.

The paper should be referred to for full details of these post-encephalitic disorders and the way in which local administrative bodies have dealt with them in England.

H. E. MACDERMOT

Bact Abortus Bang als Erreger septischer Erkrankungen beim Menschen (Bact Abortus of Bang as the Cause of Septic Infection in Man.) Habs, H., *Zeitschr f Klin Med*, 1928, cviii, 445.

The author reports in detail four cases of generalized (septic) infection in man with *Br Abortus*, in all of which the diagnosis was confirmed by agglutination tests, and in one case by blood culture as well. In the first case the patient was under observation at intervals for six months. The symptoms were inconclusive and the tentative diagnosis was typhoid fever.

In the second case the evidence of severe generalized infection with a subjective sense of well-being, a good general condition, and the experience gained in the first case, aroused the suspicion of *Br Abortus* infection.

In the third case, there was a long continued fever of intermittent type, the physical examination of the various organs was negative, the blood picture showed a leucocytosis of 7,800 per c mm., with 46 per cent of lymphocytes, there were no signs of distress even when the temperature was elevated, and the Widal test was negative. All this suggested infection with *Br Abortus*.

The fourth case showed few physical signs beyond fever of an undulating type, with slight enlargement of the spleen. There was a sense of well-being and a good general condition quite out of proportion to the degree of infection.

The source of infection was not determined, but probably was from milk.

Infection with *Br Abortus* bears a general resemblance to typhoid fever. The following signs should suggest this diagnosis: a prolonged fever of intermittent or undulant type, an only moderately increased pulse rate, slight splenic tumour, a clear mental state, a normal or diminished leucocyte count with relative lymphocytosis, and a negative Widal test. The diagnosis will be clinched by positive agglutination tests with *Br Abortus* or by a positive finding in the blood culture.

A. G. NICHOLLS

Hyperthyroidism and Diabetes John, H. J., *Am J M Sc*, 1928, clxxv, 741.

In a series of 3,335 cases of hyperthyroidism the author found non-physiological hyperglycæmia 285 times. In this series 150 glucose-tolerance tests were done. These varied from normal to those of the most severe type of diabetes. But there is no direct relationship between the glucose tolerance and the degree of hyperthyroidism, therefore the lowered glucose tolerance cannot be due to some toxic effect of the thyroid secretion.

It has been shown that the liver is practically free from glycogen in cases of hyperthyroidism, there must be some interference with the storage of glycogen which is accomplished through the influence of insulin, therefore the lack of glycogen storage indicates a shortage of insulin.

What happens to those patients who show a decreased tolerance? Even after thyroidectomy many of them must follow a dietary regimen, while in others improvement occurs without any dietary observance, but the glucose tolerance curves show that these patients are not normal even after operation. Apparently the damage wrought in the islands of Langerhans is permanent.

LILLIAN A. CHASE

Diabetes and Hyperthyroidism Joslin, E. P., and Lahey, F. H., *Am J M Sc*, 1928, clxxvi, 1.

The similarity between severe, untreated diabetes and hyperthyroidism is shown by the loss of weight, red cheeks, high metabolism, increased pulse rate, and the weakness rather than strength from the high calories consumed. The series here presented includes 75 cases. Complete recovery has not taken place in any case in this series.

The authors have raised the standard for diagnosis of diabetes in hyperthyroidism to a

blood sugar of 0.15 per cent fasting or 0.20 per cent or more after meals, in addition to glycosuria. The same diabetic family tendency was in evidence as a cause of diabetes in this group as in the conventional diabetes. In 85 per cent of the exophthalmic goitre cases the hyperthyroidism preceded the diabetes.

The authors conclude that surgery greatly ameliorates the condition of these patients, that the treatment of the diabetes in the presence of hyperthyroidism must be adapted to the increased metabolism, and gradual and moderate changes in diet and insulin should be carried out, since the tendency of the ordinary diabetic and the ordinary thyroid case is to do well. The 75 cases were not cured of their diabetes after successful operation on their thyroids but the majority were improved to an unusual degree. The hyperthyroid patient from physiological, pathological, and statistical evidence is somewhat more prone to diabetes than the ordinary individual, and for the remainder of his life should be so regarded, whether operated on or not.

LILLIAN A. CHASE

Hæmoglobin Construction Within the Body as Influenced by Diet Factors Whipple, G. H. *Am J M Sc*, 1928, *clxxv*, 721

Red muscle pigment can be isolated from striated muscle tissue and tested chemically in the living animal. There is biological evidence that muscle hæmoglobin and blood hæmoglobin of the dog are distinct substances, though they are almost indistinguishable by modern methods of examination. As a general rule the content of muscle hæmoglobin in striated muscle depends largely on work demand and exercise.

Short anæmia periods will not show any corresponding change in the level of muscle hæmoglobin. Long continued, severe, experimental anæmia may lower the muscle hæmoglobin which is not subject to rapid fluctuations. Muscle hæmoglobin is influenced by diet but the change is very slow and cannot be demonstrated in pups with less than fifteen weeks diet control. After fifteen to thirty weeks there is a manifest difference in the pup fed standard bread and the litter mate fed standard bread plus equal parts of cooked liver.

Breadstuffs and the common grains as well as dairy products are least potent of any diet factors, as measured by their capacity to promote hæmoglobin regeneration in the normal anæmic dog. Skeletal muscle varies widely in its capacity to produce new hæmoglobin. Heart muscle as a whole is a little more potent than skeletal muscle, chicken gizzard is potent. Fish is as unregenerative of hæmoglobin as bread and milk. The green leafy vegetables are popularly overrated. They have little power to help in forming hæmoglobin.

Liver is at the top of the list of favourable diet factors. Kidney stands next to liver. Hæmoglobin set free in the blood stream will not escape through the kidney until a certain concentration of hæmoglobin in the blood stream is reached.

Bone marrow, spleen, brain, and pancreas are rated about the same. They are one-third to one-quarter as potent as liver. Fruits are of extraordinary interest, because some of them are quite potent and others meagre. Apricots are high and raspberries are low.

Iron by mouth will produce a favourable reaction if there exists an iron shortage in the body, but iron plus liver gave the expected liver reaction superimposed on the iron reaction. During periods of rapid growth the anæmic dog will show a decrease of hæmoglobin production.

In the study of anæmias attention has been focused on hypothetical toxins which were supposed to destroy red cells *in vivo* and thus bring about anæmia. The author's view is that there is a large group of anæmias due to *lack of something*. Is pernicious anæmia due to lack of stroma building material but a great excess of all sorts of pigment and pigment building material? Pernicious anæmia may prove to be a deficiency disease.

LILLIAN A. CHASE

Fever in Gastric and in Duodenal Ulcer Bang, S., *Arch Int Med*, 1928, *xl*, 808

The writer states that the presence of fever in cases of peptic ulcer has not received due recognition and that, when described, its occurrence is frequently related to hæmorrhage. He analyses 386 cases and points out that while fever does occur in cases which bleed this relation is not causal. Fever is also present with non-bleeding ulcers, and the presence of large amounts of blood in the gastro-intestinal tract may possibly cause slight elevation of temperature or increase of pre-existing fever, but does not, *per se* account for the febrile course of 87.5 per cent of his series of peptic ulcer cases. The influence of the grade of anæmia and the "violence" of the hæmorrhage is also discussed and these are discarded as primary causes of fever.

It is noted that fever is more prone to occur in early acute, or rapidly progressing ulcers than in older, more chronic lesions. The extent of this fever is shown by charts to vary from 0.8° to 2.2° C above normal, and in one case to persist as a remittent and intermittent rise for 96 days.

Particular attention is drawn to the work of Askanazy, Konjetzny, and Kalma who have emphasized the acute inflammatory manifestations in and about the gastric and duodenal lesions, and the presence in the ulcer-bearing

areas of a greater or less degree of gastritis which may even precede the actual rupture of the mucosa. From this is drawn the suggestion that local or general gastritis and duodenitis is a frequent concomitant, and possibly precursor, of peptic ulcer, and that during this process a characteristic fever is exhibited.

J B ROSS

Treatment of Diphtheria Carriers Harvey, W C, *Lancet*, 1928, ii, 58

All diphtheria carriers from the Metropolitan Asylums Board Infectious Disease Hospitals were collected in one hospital, and a study made, primarily to ascertain the cause of continued harbouring of infection. All cases had been definite "carriers" for a period of at least twelve weeks, and no case was considered as cured until six cultures taken at weekly intervals showed negative results.

It was found that the diphtheria organism maintained its existence chiefly in those respiratory passages which were the seat of pathological or other abnormal processes, and that the bacilli were saprophytic in the inflammatory products and did not exist in living tissues.

Regarding treatment, the carriers with bacilli in the throat only were cured by tonsillectomy and adenoidectomy in almost 100 per cent of cases, the time of operation being set at six to eight weeks after the onset of disease, earlier than is usually advised. "Nasal carriers" were much more refractory and treatment both more prolonged and less successful. Autogenous vaccine therapy proved disappointing. Nasal douches twice daily gave the best results, in some cases combined with vaccine courses. In all, 78 per cent of cures resulted in nasal carriers.

The antrum of Highmore was suspected in chronic resistant cases, and in two bacilli were recovered from the sinus at operation. X-rays did not help in the diagnosis. Removal of adenoids alone was ineffective in nasal carriers.

The presence of virulent diphtheria bacilli in the ear was found to be uncommon but such cases were most resistant to treatment. Most ear infections were with diphtheroid organisms. The general health of the majority of carriers was excellent and seemed to play a small rôle in treatment. Greatest emphasis is laid upon removal of all collections of purulent and necrotic material in all forms of treatment.

J B ROSS

Action Nocive des Vapeurs de Formol (Noxious Action of Formalin Vapour) Sabrazès, J, and Pennanéach, J, *Comptes rend de séances de biol de Bordeaux*, 1928, xvi, 241

The authors draw attention to the dangerous action of formalin inhalation and the necessity

of protecting exposed persons from its effects, and report the direct proof obtained by them of the toxicity of formalin vapour. They chose the cobra for this purpose and exposed it in a confined atmosphere to formalinized air for one hour daily. Animals so treated died in three months. Control animals were killed the same day and the tissues of both examined. In the exposed cobra, the mucosa of the pituitary was found to be swollen and covered with mucus, and denuded of cilia, and that lining the trachea and bronchi was metaplastic, with vacuolated pyknotic cells and amorphous areas, and the wandering cells, lymphocytes, deep epithelial elements, and cilia absent, collagen and elastic tissue were increased, all vessels greatly engorged, the lungs were congested, cedematous and emphysematous, the liver, spleen and kidneys showed advanced stasis and degeneration. Similar, though less advanced, changes were seen in cobras left in the open air but in which some formalin vapour had been introduced. Further studies are being made on the changes produced by formalin vapour in the blood and hæmopoietic organs.

In view of these facts the authors suggest using, in the colour preservation of specimens, a substitute for Kaiserling solution No 1 (which contains 15 per cent formalin) of two parts per 1,000 of "chloramine sodique du toluene," and then restoring the colours by passing through alcohol and into Kaiserling's solution No III. Persons exposed to formol vapour in operating rooms or laboratories should wear a surgical mask which contains a sachet soaked with weak ammonia water or acid tartrate of ammonia or better still, with 8 per cent solution of borax in 10 volumes of water.

M. E. ABBOTT

An Ideal Medical Museum Delavan, D B, *Med J & Rec*, June 20, 1928

This paper is a strong plea for the establishment of a central medical museum on much broader lines than those already existing. Dr Delavan points out that most medical museums are narrow in scope, and, in the main, are designed to take care of undergraduate instruction. He remarks "we have few medical museums of recognized superiority." Among the three notable exceptions to his general criticism is the Pathological Museum of McGill University. From data that have been accumulated by the International Association of Medical Museums, it appears that the existing museums in Europe devote themselves to one or more of the following departments, anatomy, comparative anatomy, veterinary anatomy, anthropology, biology, bacteriology, physiology, pathology, microscopy, medical chemistry, medical toxicology, materia medica, pharmacology, surgery, and climatology. Dr Delavan

injections were given if the temperature was still high, if the patient was still toxic or if peristalsis had not been resumed. They conclude that there is enough evidence to warrant the use of this serum in cases of acute intestinal obstruction and peritonitis associated with toxæmia.

H. E. MACDERMOT

Glucose and Insulin in the Treatment of Shock

Levy, W. E. and Maclean, Henry, *Current Researches in Anæsthesia and Analgesia*, 1928, May-June, p. 161

In shock the liver tissue is specially affected. There is interference with the metabolism of carbohydrates and with the storage of glycogen. A damaged liver is the prime factor in producing a state of acidosis, a condition in which the fats are not completely burned, as indicated by a low carbon dioxide combining power and the presence of acetone and diacetic acid in the urine. The author in his treatment of shock gives, very slowly, 1,000 cc. of a 10 per cent glucose solution by intravenous injection. He takes from one and a half to two hours to administer the whole amount. When one-third of the glucose solution has entered the vein he gives one-third of the total estimated dose of insulin subcutaneously. He estimates the dosage of insulin by allowing one unit for each gram of glucose. When the second third of the glucose solution has been given insulin is again

injected. The final third of the insulin is given at the end of the injection.

The action of the insulin is probably two-fold, first, in permitting the entire consumption in the body, of the glucose (as shown by the absence of sugar and acetone in the urine shortly afterwards) thereby combating the acidosis, second, by enabling the tissues to hold fluids, which otherwise would have been excreted by the kidneys, as a result of their stimulation by free glucose.

W. B. HOWELL

Treatment of Tuberculous Peritonitis by Ether

Anæsthesia. Savage, W. E., *Current Researches in Anæsthesia and Analgesia*, 1928, May-June, p. 137

Many theories have been advanced to explain the cure of tuberculous peritonitis after an operation which has consisted in nothing more than opening and closing the abdomen. It occurred to the author that the cure might be due to the anæsthetic. Since March, 1915, he has treated seven cases of tuberculous peritonitis by ether anæsthesia alone. Of this number six recovered and one showed no improvement. The writer attributes the one failure to the fact that the disease had reached the stage of caseation. The tuberculosis having become non-vascular there was no means by which the ether in the blood could reach the foci of the disease.

W. B. HOWELL

Obituaries

He scarce had need to doff his pride or slough the dross
of earth,
E'en as he trod that day to God so walked he from his
birth,
In simpleness and gentleness and honour and clean
mirth

Beyond the loom of the last lone star, through open
darkness hurled
Farther than rebel comet dared or living star swarm
swirled,
Sits he with those that praise our God for that they
served His world

RICHARD BARRINGTON, NEVITT

AN APPRECIATION

On May 11, 1928, there "went over to the majority" a citizen and a medical practitioner whom the people honoured with one acclaim, and now mourn over as a common loss, a gentleman of the old school, and a dearly beloved doctor, whose like we shall not look upon again. He passed peacefully to his reward sitting in his chair, without sign of suffering or of struggle, his pipe laid carefully down on the table beside him, and his hands folded before him, as sinking to the sleep of the just he "passed to where beyond these voices there is the peace and rest that remaineth."

Born in Savannah, U.S.A., on November 22, 1850, he had completed a little more than half of his seventy-eighth year, and so was ripe for Time's sickle though by no means decrepit in mind or body. Shakespeare has

told us that "men must endure their going hence even as their coming hither, ripeness is all." It chanced that he came to "school age," that pregnant time of leisure, in the midst of the fratricidal strife known to history as the "War of the Secession," and was compelled to seek friendly shelter and opportunity of learning within the Canadian border line, and so in 1865 he became a student at Bishop's College, Lennoxville. Here he diligently applied himself to the tasks of peace until he was able in 1868 to matriculate in the University of Trinity College, Toronto. His further progress in that seat of higher learning is sufficiently indicated in this abbreviated form, B.A., 1871, M.B., 1874, M.D., 1882. In the latter half of his medical undergraduate ship he lived in the General Hospital, at first as a dresser, then as assistant apothecary, and finally as house surgeon, serving both in patients and out patients. This was a clinical opportunity of inestimable advantage, comparable to the old time apprenticeship in making practical practitioners. In the summer or autumn of 1874 he received the appointment of surgeon to the now famous North West Mounted Police, and proceeded to Fort McLeod, by way of Pembina and Winnipeg, one thousand miles on horseback, to join Colonel McLeod, and the incomparable force which he commanded, a force which has covered itself with a cloak of romance, as carrying and dispensing the King's justice "from sea to sea, and from the river (St. Lawrence) to the ends of the earth."

Amid this band of heroes he was no laggard, but did his duty fully with the best. His experience differed somewhat from that of his comrades, for he was ex-

pected to exercise his art among the aborigines whose camps came within his reach. These experiences, as detailed in his diaries, throw much light upon the habits and superstitions of the natural Indian, and would at that time instil into the savage mind new ideas of "the medicine man," so deft was he in many ways and specially in his handling of difficult parturition. Naturally, he worked single handed and had to fulfil many functions simultaneously, but these poor benighted people were treated with the same consideration and regard as would be manifested in civilized surroundings. He was throughout his life always most modest and retiring, though strong in will and inflexible in purpose.

He returned to Toronto in 1878 and began a civil practice which was only abandoned on the day of his



Richard Barrington Nevitt

death, in obedience to the imperious summons for duty elsewhere, for as Tennyson said of the Iron Duke, "There must be other nobler work to do, than when he fought at Waterloo, and victor he must ever be."

Immediately on returning to practise in this city, he set himself with his accustomed courageous vigour to carve out for himself, without powerful friends and influence, a successful career, and shortly became one of the most widely known practitioners of the city. While cultivating his surgical instincts and proclivities, he carried on for years an obstetric, gynaecological and general practice, which involved, on an average, a birth a day, a performance perhaps only equalled in extent by the records of the elder Dr James Ross, and Dr Jerrold Douglas Ball. It is to be noted, however, that these latter did no hospital or teaching work as did Dr Nevitt so persistently in his long and active association with the House of Providence, the Children's and the General Hospitals, and, more particularly perhaps, with St Michael's Hospital from its beginning. Dr Nevitt had a good clinical instinct, a trained mind, and a deft hand. The classic lore acquired at Trinity from the accomplished John Ambery was never laid aside, and many a student has reaped enjoyment from the sowings of that excellent son of Brasenose.

Perhaps the association through which Dr Nevitt will be longest remembered will be his active connection

with the Women's Medical College in Toronto. To Dr Michael Barrett, of pious memory, the resident medical officer of Upper Canada College, successful teacher there of classics, anatomy, physiology and chemistry, and professor of physiology at the Toronto School of Medicine, is given the credit of establishing this school in 1883. On his first association with the college Dr Nevitt occupied the Chair of Sanitary Science, but in 1887, after Dr Barrett's sudden demise, there was a readjustment and Dr Nevitt assumed the Chair of Surgery. Dr McPhedran was at the time elected Dean, but retained office for a very short time, and was at once succeeded by Dr Nevitt, who continued to preside over the destinies of the school until the amalgamation of Trinity with Toronto's medical faculty in 1906, at which time the question of co-education in medicine was also settled. He retired from active teaching life with the disappearance of the Women's College, but retained his interests in the corporation of this institution and also in that of Trinity, and continued his duties at the Women's Hospital and Dispensary while still keeping up his surgeoncy at St Michael's Hospital.

Dr Nevitt was a member of the Academy of Medicine from its inception, and a member of the Ontario and Canadian Medical Associations, he was also an active associate of the Toronto Medical Society and of the Library Association. Shortly before his death the Academy made him an honorary member *in perpetuum*.

Dr Nevitt's father was Mr John Wilson Nevitt, a merchant of Savannah, and his mother was Miss Mary Tschudi of Alsace and Philadelphia. He married Miss Elizabeth Ellen Beaty, elder daughter of Mr Robert Beaty of "The Leader," who died about nine months ago.

Doctor and Mrs Nevitt have left issue surviving them, two sons, Irving H. C. Nevitt and Richard Nevitt, and two daughters, Mrs George Egerton Ryerson and Mrs Davidson Black. One son, the Rev Barrington Nevitt, died in 1918, and another son, Bertram, was killed in action at Courcellette in 1916.

Requiescent omnes, permultis ille bonis flebilis ultimus occidit. In eternam pacem emigravit

IRVING H. CAMERON

Dr C. M. Anderson, Director of Provincial Laboratories, Department of Health, died suddenly on July 18th, at the summer home of his father in law, Mr James Frith, Burritt's Rapids, Ontario.

Dr Anderson was in his thirty ninth year. He was born in Ottawa and received his preparatory education in that city. He graduated from McGill University in 1915 with the degree of M.D., C.M. Immediately following his graduation he engaged in laboratory work at the Royal Victoria Hospital, Montreal, and following this he proceeded overseas as Captain in the Royal Army Medical Corps, where he served with distinction in the Field Ambulance Service. Upon his return to Ottawa he served on the staff of the Department of Soldiers' Civil Reestablishment, and then in 1920 he attended the School of Hygiene at Johns Hopkins University, Baltimore, and received the Diploma of Public Health from this institution.

On the completion of his public health course he was appointed Bacteriologist to the Provincial Department of Health and in this position he so distinguished himself that in 1923 he was appointed Director of Laboratories, succeeding Mr H. M. Lancaster, who is now Chief Chemist of the Federal Department of Health, Ottawa. Dr Anderson in his position in the Department of Health was an able administrator and most efficient director, always doing his utmost to give the maximum service to the medical profession and public in the province. He is survived by his wife and two young daughters, now residing in Ottawa.

Dr Hector Bonner, who graduated from Trinity in 1877, died in Toronto late in June. Dr Bonner had been surgeon in the North West Mounted Police, going to the Yukon in 1897, and while there was successful in locating some valuable claims. Retiring to Toronto, Dr Bonner began again to practise, though at an advanced age, and for the last eight years he had kept at work until failing health necessitated his going to the Hamilton Sanitarium where he resided until his death. A man of many interests, Dr Bonner had concerned himself with politics as well as with medicine and prospecting, and had been a Liberal candidate in both the provincial and federal Houses.

Dr Henri Alfred Archambault, a physician of many years' standing in Montreal, died at his home, 111 Grand Boulevard, Notre Dame de Grace, on July 29, 1928, at the age of 76. Dr Archambault was born in L'Assomption, and was educated in the local schools and, later, at Victoria College, where he studied medicine. He graduated from this medical school in 1883 and took up the practice of his profession in Montreal. For many years his office was on St. Louis Square. Later, Dr Archambault was appointed Surgeon major to the 65th Battalion, and he served with this regiment for a long period. He was also for a time physician to the old Montreal jail, and a great many of the prisoners passed through his hands at various times. Some years ago failing health necessitated his retirement and for the past year he has been seriously ill.

Dr James Stanley Chisholm. The death of Dr James Stanley Chisholm, of Mahone, Nova Scotia, occurred at the Homewood Sanitarium, Guelph, Ontario, on the twenty ninth of July.

Dr Chisholm had been convalescing from a nervous condition for which he had entered the Sanitarium, and his death was unexpected.

He was a son of Dr Murdoch Chisholm, of Halifax, who is very well known throughout Canada, and is a Past President of the Canadian Medical Association. After graduation in 1915 the deceased doctor enlisted for overseas service, and, shortly after his return, located at Mahone, where he quickly built up a large general practice, and established himself in the favour of the people.

Dr Wallace A. M. Dinwoody, one of the most promising of the younger medical men, died in the General Hospital, Toronto, on July 30th, as a result of hemorrhage from a duodenal ulcer.

Dr J. A. Dufresne passed away on July 25th, at his residence at Shawinigan. He had been in poor health for the last two years. Born at Deschambault in 1869, he studied at Three Rivers Seminary, Ste Anne de la Pocatière College, Quebec Little Seminary, and graduated as a physician at Laval University in 1895. He first practised medicine in his home town. In 1901 he moved over to Shawinigan Falls. He took at once a keen interest in the local politics of that newly born town and was in 1902 elected alderman. He was re-elected in 1904 and 1911. In 1920 he was elected by a large majority as mayor of Shawinigan Falls, and sat for eight years as the first magistrate of that fast growing city. He retired only in last July, on account of illness. In 1922 he was elected first

president of the Union of Canadian Municipalities, and as such the next year presided over its convention at Shawinigan Falls. The city council of Shawinigan Falls voted at a special meeting to give a civic funeral to Dr Dufresne, as the last tribute of the city whose citizen he has been for eight years.

Dr R. C. Ogilvie, formerly of Campbellford, Ont., whose death occurred on August 2nd, in Superior, Wis., after a long illness, was a graduate in medicine of the University of Toronto, who practised for some years in Port Hope, Mich., and later retired to enter the lumber business in the west.

Dr Allen B. Earle, a graduate of Queen's University in 1913, died in Hamilton on July 26th. Dr Earle served throughout the war in the Canadian Army Medical Corps, doing active front line work and receiving wounds from which he never completely recovered. He had taken post-graduate work in New York and London, and in his years in Hamilton had been devoting himself largely to surgery.

Dr Robert M. Goodwin, one of the most esteemed of the older practitioners of Manitoba, died very suddenly at his home in Carberry on July 26th. He had seemed to be in his usual health and good spirits on that day, had played a round of golf, and was ministering to a patient when he fell forward and expired almost immediately.

Graduating from Manitoba Medical College in 1894, he practised first in Elkhorn where he enjoyed a large following. Eight years ago he took up farming, but after two years resumed practice at McAuley, and in 1922 he moved to Carberry.

In his younger days he was a prominent athlete. He was a member of the United Church of Canada and was active in his Masonic lodge. He is survived by his widow and four children, one of whom, Dr Alex. M. Goodwin, is now in Edinburgh doing post graduate work.

Major Joseph W. Hunt, M.B., M.R.C.S., L.R.C.P. Following an illness of only a few days Dr J. W. Hunt, Clinical Specialist in the Division of Preventable Diseases of the Provincial Department of Health, passed away on Tuesday, July 24th, in the Toronto General Hospital, at the age of forty four years.

Born at Parry Sound and educated in Blind River and Albert College he received his medical degree from the University of Toronto in 1907. Following this he spent a year in London, England, where he continued his medical education and, upon return to Canada, settled in Sault Ste. Marie where he engaged in practice. Upon the outbreak of the War, Dr Hunt enlisted as medical officer, and served in France with great distinction until the close of hostilities. He was severely wounded during the year 1917. After serving on the medical staff of Christie Street Hospital for a year, he entered the service of the Provincial Department of Health in 1920 as Clinical Specialist, which position he held at the time of his death. His genial personality and unselfishness had made him a great favourite, and his loss will be deeply felt by his colleagues.

He is survived by his mother, Mrs. M. Hunt, and his sister, Miss Annie Hunt, both of Ridgeway, Ont., and his wife and three young children of this city. His burial was with full military honours.

News Items

BRITISH EMPIRE

The Council of the College of Surgeons of Australasia has decided to publish a journal. Its object is to assist the college in its aim to advance the science and art of surgery, and to encourage members of the medical profession to become efficient surgeons. It is felt that the publication of the new journal will not interfere with the usefulness of the *Medical Journal of Australia*, and that there will be ample scope for each.

History of Medicine in Wales

In connection with the recent meeting of the British Medical Association "an interesting little exhibition had been gathered together in the National Museum of Wales at Cardiff for the purpose of illustrating the history of medicine in the Principality, various manuscripts, charms, remedies, and other objects having been selected from the National Library, the National Museum, and the Cardiff Public Library. Specimens of "hydrophobia stones" were shown, these were composed of a kind of alabaster, and scrapings of them were mixed with milk and drunk by those who had been bitten by dogs and cats. The owner of one of these stones knew a man who, after a bite, about the year 1850, "meowed" like a cat, and was not relieved until he had received a dose of the medicine. The "Laws of Hywel Dda," in the tenth century, prescribed the status of the doctor, who was one of the officers of the royal household. He received his linen from the queen and his woollen cloth from the king. He had to attend all within the court gratuitously, except in certain emergencies, for which he received ninespence and his food, together with the "blood stained clothes" of his patient. His "sarhad" (in English "insult") was six kane and sixpence in silver, his social value was estimated at six score and six kane. One portion of the Laws dealt with the value of the members of the human body. Thus the value of a finger was one cow and twenty pence. The organs of generation were equal to one half of all the organs as also was the tongue, which must have rendered computation occasionally difficult after an aggravated assault. The exhibition included the text of the "Meddygon Myddfai," to which the President alluded in his address, containing the medical lore of the twelfth century physicians of Myddfai in Carmarthenshire. A fifteenth century manuscript on vellum consisted of a Latin translation of *Almansor*, a popular Arabic medical work. The manuscript showed very fine workmanship, being rubricated throughout, and with an illuminated capital letter at the beginning of each of the ten books. In connection with this exhibition at Cardiff it is interesting to note that the directors of the Wellcome Historical Medical Museum have announced the publication shortly of a book on the history and lore of Cymric medicine" (*Brit M J*, 1928, ii, 216).

Ferrier Memorial Fund

The contributors to the Ferrier Memorial Fund met on July 15th under the chairmanship of Sir Charles Sherrington, and resolved to invite the Royal Society to accept the sum of £1,000 in trust to found a David Ferrier Memorial Lecture. It was further decided that the balance of the fund shall be applied as seems best when the total contributions are known. The fund will be closed on September 30th. The honorary treasurer is Dr W. Aldren Turner, 18, Harley Street, W.1.

Emeritus Professor E. M. Crookshank, the eminent bacteriologist, died suddenly recently at Ridge Hill Manor, East Grinstead, in his 70th year. His loss will be severely felt, not only in the medical world, but also in veterinary and agricultural science, to which he devoted the later years of his life.

The youngest son of Captain Chichester Crookshank, at an early age he showed a taste for scientific work. He studied under the late Lord Lister, and in 1882, at the age of 24, was selected for special duty in antiseptic surgery on the staff of Sir James Hanbury, principal medical officer of the Egyptian Expedition. He was present at the battle of Tel el Kebir, and received the medal and the Khedive's star for his services. He wrote a report on the antiseptic methods employed at the field and base hospitals of the expedition, and gave valuable evidence before the Royal Commission on the Medical Services in Egypt. In 1886 he was appointed Professor of Bacteriology in King's College, and founded there the first laboratory to be established in England for research and instruction in bacteriology and comparative pathology. He was a skilled hunter of big game, and at his home at East Grinstead were many heads which had fallen to his gun in South Africa and elsewhere.

The Use of Ethyl Petrol

An interim report of the Departmental Committee on ethyl petrol which has been published, supports the conclusion of the United States Government Committee that there are no reasons for prohibiting the use of ethyl petrol.

The investigations made in America are described in the report, and the committee state that, although there is no evidence to show that the use of ethyl petrol as a motor fuel involves more dangers to health than the use of ordinary petrol, they think, for the time being, the precautions indicated in regulations suggested by the United States Committee are desirable. They also point out that adequate ventilation of all garages, whether ethyl petrol is used or not, is a matter of considerable importance, and that the danger from carbon monoxide in an unventilated garage is very serious.

The Glasgow Meeting of the British Association

This year's meeting of the British Association for the Advancement of Science will be held in Glasgow, opening on September 5th. The president, Sir William Bragg, will give an address on "Craftsmanship and Science," reviewing in a wide, rather than technical, manner the relations between science and industry. The two evening discourses will be given by Professor E. A. Westermarck on "The Study of Popular Savings," and by Professor F. G. Donnan, on "The Mystery of Life." Professor Donnan's address will be a study of the present position in biochemical research. Nearly three hundred papers will be presented in the various sections.

Receptions by the Lord Provost and the Corporation will be held in the City Hall, and by the local committee in the Kelvington Art Galleries. Entertainments by public bodies, the Chamber of Commerce, Corporation of Paisley, Royal Faculty of Physician and Surgeons, Platform of the Trades House, Royal Technical College, Institution of Engineers and Shipbuilders, Glasgow and West of Scotland College of Domestic Science, Clyde Navigation Trustees (in connection with their annual inspection of the port and harbour of Glasgow) are also included on the program, in addition to a special service on Sunday, September 9th, in the Cathedral of St Mungo.

NOVA SCOTIA

Dr R M Pearce, Director of Medical Education, Rockefeller Foundation, and Dr D L Edsall, Dean of Medicine, Harvard University, were visitors to Halifax early in August. The particular object of their visit was to make a thorough examination of the equipment and teaching facilities of the medical school of Dalhousie University.

Mr Justice Chisholm has been appointed a member of the Board of Commissioners of the Victoria General Hospital, Halifax, to fill the vacancy caused by the death of Judge Wallace. Mr Justice Chisholm is eminently qualified to serve in this capacity and his appointment has given general satisfaction.

An action for damages to the amount of ten thousand dollars has been brought against the Yarmouth Hospital by a former patient of that institution. The claim is based on the fact that the superintendent of the hospital, a fully qualified nurse, while changing dressings, probed a sinus to the detriment of the patient's condition. The case came up before the July session of the Supreme Court, but only evidence was taken and argument was postponed for a subsequent session of the Court. A number of medical men were called upon for evidence or opinion and considerable difference of opinion was expressed.

Dr E W H Cruikshank has been appointed to succeed Dr Boris Babkin as Professor of Physiology at Dalhousie University. Dr Cruikshank has had a varied experience and is highly recommended, both as a physiologist and a teacher. Dr Cruikshank followed his studies at the University of Aberdeen, King's College, London, and University College, London. At present he has a teaching position at the Medical College, Tatma, India. Dr Babkin is spending the summer in Europe but will return in time to take up his new work at McGill University in the autumn.

Dr G S Eadie, of the Department of Physiology, Dalhousie University, has resigned to accept a position at the Johns Hopkins University.

Dr Mary Stevenson has been appointed assistant to Dr R P Smith, Professor of Pathology at Dalhousie University. She graduated from Glasgow University in 1924. Her technical training was received under Dr Crappell, Western Infirmary, Glasgow.

Dr Clyde W Holland has been appointed to the Chair of Bacteriology, Dalhousie University. Dr Holland graduated at Dalhousie in 1923, his course having been interrupted by overseas service. Since graduation he has had a varied experience and has shown capacity as a teacher.

Dr H L Scammell, of Pictou, has been appointed assistant resident medical officer at the Victoria General Hospital, Halifax.

The trustees of the Payzant Memorial Hospital, Windsor, N.S., have decided to build an addition which will raise its capacity to fifty beds.

Tenders are being asked for a substantial addition to the Ross Hospital, Sydney.

An investigation into the causation of common colds, which is to be carried on over five years and is being financed by the Chemical Foundation of New York, is to be headed by Dr James A Doull, Associate

Professor of Epidemiology, Johns Hopkins University. School of Hygiene. Dr Doull is a Nova Scotian and a graduate of Dalhousie.

In order to assure a good representation of Nova Scotia at the Charlottetown meeting of the Canadian Medical Association, it was decided that the annual meeting of the Medical Society of Nova Scotia, which normally would have been held early in July, should be postponed. Inasmuch as this is the year for the seventy-fifth annual meeting of the Society, it was felt that it would be inadvisable to cancel the meeting. Arrangements are now being made to combine three events at Halifax in the month of October, when the seventy-fifth meeting of the Medical Society will be held, when the diamond jubilee of the Dalhousie Medical School will be celebrated, and when the Dalhousie Medical Refresher Course will be put on. The Canadian Medical Association is co-operating actively and the program being arranged will undoubtedly attract a very large attendance. Some very special features are being prepared and it is planned that every province of the Dominion will be represented in the "faculty" of the Refresher Course.

The Dental Society of Nova Scotia held its annual meeting at Halifax in July and was largely attended. Several eminent members of the profession from other provinces and from the United States were present and took part in the program. Dr J P Parker, of Sydney, N.S., was elected President, and Dr J Stanley Bagnell, of Halifax, Secretary-Treasurer.

Last winter several cases of typhoid fever developed in the town of Stellarton, and six deaths resulted. Quite recently the husband of a woman who was one of the victims has issued a writ against the town under the Fatal Injuries Act, claiming \$15,000 for damages due to the death of his wife. It is alleged that sufficient care was not taken to prevent infection of the town water supply. The action will be tried at the next session of the Supreme Court. It is rumoured that other persons will bring action against the town on the same grounds.

W H HATTIE

Following the Canadian Medical Association meeting in Charlottetown, Dr G Harvey Agnew, of Toronto, the Associate Secretary of the Association, visited most of the hospitals in the Maritime Provinces. From Wolfville to Digby local doctors motored him from place to place, so he visited all the hospitals in the valley. The Hospital Section of the Canadian Medical Association promises to be of considerable value to the smaller institutions.

On the evening of July 14th there was an informal reunion of a number of Dalhousie graduates at a dinner in the Isle Royal Hotel, Sydney, which was followed by a social evening at the Cape Breton Yacht Club.

It is announced that Dr A M Marshall, of Halifax, left early in July for the Hawaiian Islands for several months, to be in charge of a local hospital for that time.

Last month we noted that Dr O W Bliss, of Amherst, was the first patient to be operated upon in the temporary quarters occupied by Highland View Hospital after the fire. He is now spending some time convalescing with his son, Dr Gerald, in Altoona, Pa.

S L WALKER

QUEBEC

The cities of Grand Mère, Outremont, Westmount, Vallevfield, and Kenogami have registered the lowest infant mortality during the month of May, according to the vital statistics issued by the Provincial Bureau of Health. Everywhere throughout the province there is a favourable decrease in general mortality and in infant mortality as compared with the same months of 1926 and 1927. The highest birthrate for the month is shown by the city of Kenogami.

The number of births in May last in the province were 6,768, as compared with 7,305 in 1926, and 7,796 in 1927. Marriages were 1,345 last May, 1,333 in 1926, and 1,467 in 1927. Deaths at all ages, were 3,003 last May, 3,605 in 1926, and 3,359 in 1927. Infant mortality was 872 in 1928, 1,057 in 1926, and 892 in 1927. It is interesting to note that during the month of May no deaths of children under one year of age were reported in Grand Mère, Outremont, Westmount, Vallevfield and Kenogami.

The town of Chicoutimi will be the centre of the sanitary unit for Chicoutimi county, the city council there having unanimously adopted a resolution calling on the Provincial Government to establish one for the county with its headquarters in the city. Chicoutimi is willing to contribute \$600.00 per annum towards the unit, the remainder of the necessary amount

coming for the different parishes, from the Provincial Government, and the Rockefeller Foundation. The city council of Chicoutimi also suggested that the Government be asked to supply the necessary vaccine to prevent any outbreak of diphtheria.

A new chapter dealing with laboratory work has been added to the bulletin issued every two months by the Health Department. This shows that this year, so far this department has made 31 food analyses, 5,262, of milk and cream. 61 examinations for contagious disease, 11, in diphtheria carriers, 42, for drugs, and 6,021 clinical analyses, making a total of 12,328. In milk inspection work, under the new by law, there have been 9,190 milk tests taken in various restaurants. Eleven convictions were made in the city, while 6,722 inspections were made in the country, with a total of 56,644 cows, 3,932 stables, 3,263 dairies. Arising out of these, 332 notices were sent and 86 dairies banned.

Dr Guillemette, of Baie St Paul, was elected President of the recently re-organized Medical Society of Charlevoix-Saguenay. Dr P. E. Paquin was chosen Secretary.

GEORGE HALL

ONTARIO

The annual meeting of the Ontario Medical Association for 1929 will be held on May 28th, 29th, 30th and 31st, in the city of Hamilton. The local committee has already held its first meeting for the discussion of preliminary arrangements.

The annual meetings of the Counsellor Districts of the Ontario Medical Association will be held on the following dates—

- District No 1, at London, on October 26th
- District No 2, at Simcoe, on September 26th
- District No 3, at Owen Sound, on October 10th
- District No 4, at Hamilton, on October 25th
- District No 5, at Barrie, on October 3rd
- District No 6, at Belleville, on September 27th
- District No 7, at Kingston, on October 31st
- District No 8, at Ottawa, on October 24th
- District No 9, at Sudbury, on September 6th, and at Timmins, on October 5th

District No 10 at Port Arthur and Fort William, on September 8th.

On July 10th, the Hastings and Prince Edward County Medical Society met at Madoc. An address was given by Dr J. K. McGregor of Hamilton on "Indigestion."

The Renfrew County Medical Society met at Renfrew on July 11th. Dr J. W. Ross, of Toronto, gave a talk on "Abdominal Pain", and Dr Norman

B. Gwyn, of Toronto, spoke on "Pneumonia."

On July 18th, at a meeting of the Northumberland and Durham Medical Society held at Cobourg, Dr H. S. Hutchison, of Toronto, gave a talk on "Goitre."

The Bruce County Medical Society met at Kincardine on July 19th, and was visited by Drs W. P. Tew and J. W. Crane of London. Dr Tew spoke on "The management of certain obstetrical emergencies", and Dr Crane gave a talk on nephritis.

At a meeting of the Huron County Medical Society, held at Wingham on July 25th, Dr A. H. W. Caulfield, of Toronto, gave an address on "Practice and prevention in non-tuberculous pulmonary disease."

On July 25th, the Lambton County Medical Society met at Sarnia, when Dr J. W. Ross gave an address on "Abdominal pain."

Dr C. H. Best, head of the Department of Physiological Hygiene in the School of Hygiene, University of Toronto, has been awarded the Degree of D.Sc., by the University of London for his research in biochemistry and physiology, carried out at the National Institute for Medical Research, Hampstead.

N. B. GWYN

MANITOBA

The infant mortality rate, 59 per 1,000 live births, for the first six months of this year, is the lowest ever recorded for the half year period in the history of Winnipeg

The tuberculosis survey carried out in Manitoba by the Health and Hospital Committee of the Welfare Supervision Board has been completed and the records have been turned over to M. P. Morrison, actuary of the Monarch Life Assurance Company, for summarizing. After Mr Morrison's report is prepared for the Minister of Public Health, Hon. Dr. E. W. Montgomery, legislation aiming at the better care of tuberculous patients and protection of non-affected persons will be drafted for introduction at the next session of the legislature.

A highly successful meeting of the Brandon and District Medical Association was held at the Manitoba Sanatorium, Ninette, on August 4th. Short addresses were given by members of the staff, Drs. Ross, Scott, Perrin, Mary McKenzie, Bennett, Morgan, Malcolmson, and D. A. Stewart.

The annual meeting of the Manitoba Medical Association was held on August 10th and 11th. The visiting speakers were Drs. Alexander Primrose, F. F. Tisdall, and R. R. Graham, of Toronto, and Dr. J. C. Meakins, of Montreal.

Dr. W. A. Gardner, of Winnipeg, in company with Dr. Hart of Toronto and Dr. Wright of Montreal, gave

an illustrated address on fractures before a meeting of the Eastern Saskatchewan Medical Association at Broadview on July 11th.

Dr. R. W. Jeffrey, of Monroe, Wash., has located at Carberry, Man.

Dr. A. W. S. Hay is now associated in practice with Drs. N. J. Maclean, P. H. Thorlakson and N. H. Blahie of Winnipeg.

Dr. C. A. Rice and Dr. S. Kobrinsky have been appointed to the honorary attending staff of Grace Hospital, Winnipeg.

ROSS MITCHELL

A mosquito prevention campaign was inaugurated this spring, in Winnipeg and its suburbs, by the Winnipeg Health League, and the Young Men's Board of Trade. A fund was raised by popular subscription for this purpose, which was supplemented by a grant from the City Council. Oiling was carried on extensively, measures were taken to drain low lying land, and holes where water might collect were filled in. Surprisingly good results were obtained, and it is gratifying to be able to report that the mosquito, which in the past has been the most unpleasant feature of the summer in this neighbourhood, has this year been practically absent. The citizens of Winnipeg and suburbs are indebted to the organizers and workers who have brought this condition about.

ALBERTA

Advertisements have appeared in certain medical journals in Great Britain regarding vacancies in medical practice in western Canada, and physicians interested have been enquiring through the British Medical Association as to the reasons why these vacancies were not filled by Canadians. In such instances it would seem that the advertisers hoped to secure physicians at reduced rates from Great Britain. Since school inspectors receive \$250.00 a month and expenses, Deputy Ministers \$4,500.00 to \$5,500.00 a year and Cabinet Ministers \$8,000.00 and expenses, one wonders why it is that some communities consider that a medical man should accept \$2,500.00 a year and finance his office and the upkeep of his automobile.

Members of the Alberta Medical Association are anticipating an excellent meeting this year on September 18th, 19th and 20th at Edmonton. A splendid aggregate of the professional staffs of Toronto, McGill and Queen's Universities, as well as others, will be present to give lectures, clinics and speak on special subjects, including Professor J. C. Meakins, Montreal; Professor A. Primrose, Toronto; Professor Roscoe Graham, Toronto; Professor J. Miller, Kingston; Dr. F. F. Tisdale, Toronto; Dr. G. H. Agnew, Toronto; and Dr. T. C. Routley, General Secretary of the Canadian Medical Association.

The travelling tonsil clinic of the Provincial Department of Health made the rounds of the Peace River District, following out its usual method of procedure. According to reports most of the work was carried out where there were physicians with estab-

lished practices, and not in the outlying places as one would have expected would be the case. Many believe that this bargain counter work with bargain counter attention is destined to be a passing affair. Operations are carried out on a cash basis, hence the needy remain away if short of funds, going later to the family physician where they are sure of service, regardless of time, of distance or of remuneration. If the profession in this province is to learn anything from these clinics, it is that the Government approves of the principle of cash for medical services.

The following physicians have recently registered in Alberta: James Ferguson Brunton, Edmonton; Percy Harry Sprague, Calgary; Ernest Aikman Hunt, Calgary; Terence James Agnew, Calgary; Gerard Fordyce Chappelle, Edmonton; Herbert Charles Furst, Strathmore; John Joseph Doherty, Gadsby; Lola D. McLatchie, Calgary; Charles Bramwell Rich, Kitscoty; William Barr Murray, Irma; Edward Alfred Johnson, Edmonton; James E. Patterson, Sarnia, Ont.; W. A. MacDonald, Delia; W. E. Ingram, Calgary; J. D. Matheson, Granum.

We are pleased to learn that Dr. R. H. O'Callaghan is making a satisfactory recovery from the operation consequent on his serious accident in July. He expects to leave for England shortly.

Dr. John A. Matheson, a graduate of Toronto University and an interne of the Harper Hospital, Detroit, for the past two years, is now associated with Dr. A. G. Scott, Bassano.

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A STERILE, slightly acidulated, aqueous extract of the posterior lobe of the pituitary gland of cattle, standardized so that each cubic centimeter has the activity upon the isolated uterus of a virgin guinea pig corresponding to 10 International Units [League of Nations' Standard].

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½ c c Ampoules (5 International Units) in boxes of six and boxes of one hundred
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MONTREAL

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CANADA

Manufacturing Pharmacists Since 1899

Dr D J M Crawford, of Red Deer, left recently for Toronto, where he has accepted an internship in the Sick Children's Hospital

Dr Charlesworth, of Edmonton, a son of the Deputy Minister of Public Works, is rapidly regaining his health, following an operation

Dr Harry Smith, Superintendent of the Royal Alexandra Hospital, Edmonton, has returned to duty, following an operation for appendicitis

Dr J M Hotson, a pioneer physician in the Viking district, is now in practice in Vancouver

Dr Hector McKenzie, formerly of Milo, has returned from British Columbia and is now acting as locum tenens for Dr Meyer of Athabasca

Dr D Wannop, of Nanton, has disposed of his practice to Dr W E Tiffin, of Kimberley, B C, who formerly practised in Alberta. Dr Wannop will likely return to Southern China, where he had charge of a large hospital prior to the recent revolution

G E LEAFMOUTH

BRITISH COLUMBIA

The sixth annual meeting of the Canadian Society for the Study of Diseases of Children was held in Vancouver on June 29th. When one takes into consideration the very tender age of this society and the far western locale of the meeting, the membership attendance—33 per cent—was indeed excellent. Following as it did on the heels of the midsummer session of the North Pacific Paediatric Society several men from the adjoining States of Washington and Oregon were enabled to remain over for the meeting.

The sessions were held in the Patricia room of the Hotel Georgia, and opened with the presidential address of Dr Geo R Pirie of Toronto. His remarks, and the paper of Dr H P Wright which followed, dealt with an outbreak of acute intestinal infection in Toronto last year. A very prolonged and excellent discussion on the rational approach to disturbances of nutrition in infancy followed. Dr F M Fry's paper, which was read *in absentia* by Dr A P Hart, dealt with the very pertinent question "What is a paediatrist?" and drew attention to the looseness in spelling this and other medical terms. Dr Howard Spohn reported a rare case of "Teratoma of the neck" in a boy of five. Dr Frank H Boone's paper dealt with "Chronic diffuse nephritis in young children with report of a case." Dr H B Cushing of Montreal, outlined the different types of erysipelas antitoxin. The morning session closed with a paper by Dr S G Ross and Jessie B Scriver (by invitation) on the "Use of bananas as a food for normal infants and young children."

The afternoon session opened with the showing of a moving picture reel of a case of "Aniridia congenita" from the Boston Children's Hospital, discussed by Dr H P Wright. Dr A P Hart's paper on Birkhaug's rheumatic toxin brought out the disappointing results obtained in Toronto with the use of this test, which Dr Birkhaug, said the speaker, appeared to think might be due to a different strain existing in Toronto. Dr Alan Canfield's talk on "Some observations in child life with special attention to feeding and physique" dealt with the treatment of the type of child to which the speaker gave the name "Underling." "A case of cerebellar abscess" was reported by Dr Geo Borer, in which the apparent impossibility of correct diagnosis had resulted in the death of the patient. Each paper was followed by an excellent discussion. At the business meeting which followed the reading of the scientific papers, the following officers were elected for the coming year: President, Dr Crossan Clark, Secretary, Dr Frank H Boone, both of Hamilton, Ontario (*Bull Vancouver Med Ass*, 1928, xi, 354).

Dr J W Arbuckle, of Vancouver, and Dr J G McKay, of New Westminster, conducted the post graduate tour of Alberta in July, giving lectures and

holding meetings under the auspices of the Canadian Medical, Alberta Medical, and British Columbia Medical Associations. They were accompanied by Drs Geo R Pirie, of Toronto, and S G Ross, of Montreal. Meetings were held at Medicine Hat, Lethbridge, Calgary, Drumheller, Calgary, Red Deer, Stettler, Camrose, Edmonton, and Vermilion. These doctors were accorded an enthusiastic reception and they report very satisfactory meetings.

Another extra mural post graduate tour throughout the province will be carried out jointly by the Canadian Medical and British Columbia Medical Associations in August and September. Arrangements have been completed with Dr A T Bazin, Assistant Professor of Surgery, McGill University, Dr A H Gordon, Associate Professor of Medicine, McGill University, and Dr Gordon Bates, of Toronto, to give the lectures and clinics. The itinerary will be as follows: August 27th and 28th, Cranbrook, August 28th, Grand Forks, August 30th and 31st, Kelowna, September 4th, Chilliwack, September 5th, Vancouver, September 6th, Nanaimo, September 7th and 8th, Victoria, September 12th, Prince Rupert, September 14th, Prince George. Dr Theo H Lennie, Vice President of the British Columbia Medical Association, will accompany the speakers from Cranbrook to Vancouver, and Dr H Spohn, of Vancouver, will travel to Prince Rupert and Prince George.

The Vancouver Medical Association had the pleasure of hearing an address by Dr Hilding Berglund, of the University of Minnesota, on his way through Vancouver en route to Peking. Dr Berglund discussed the most recent work in connection with the anemias, particularly the results obtained with the liver diet. At the same meeting Dr Lewis Smith, formerly on the teaching staff of the London Hospital, gave an amusing, and at the same time very timely, address on "Mischievous methods in modern medicine."

Dr H A Rawlings, who for the past five years has been in charge of the Rotary Clinic for Diseases of the Chest in Vancouver, is taking up private practice as a radiologist in the city, giving only part of his time to the clinic. Dr W H Hatfield will be associated with Dr Rawlings as part time medical officer of the Rotary Clinic from the middle of August.

Dr H W Hill has been appointed one of the Royal Commission to enquire into the milk situation in the Province of British Columbia. The commission has already held a number of sittings as witnesses. For a number of years the milk supply of the City of



PURE COD LIVER OIL

The highest grade of Medicinal Cod Liver Oil, obtained from strictly fresh livers of Newfoundland Codfish under conditions which produce an Oil of maximum vitamin value

BIOLOGICAL ASSAY

Vitamin A

The biological methods used in assaying for the growth promoting (Vitamin A) value of this oil, follow along the lines adopted by the Department of Pharmacology, University of Toronto, as described in the *Canadian Medical Association Journal*, October, 1924. The standard for "Ayerst" Cod Liver Oil is 400 Vitamin A units per Gm or better.

Vitamin D

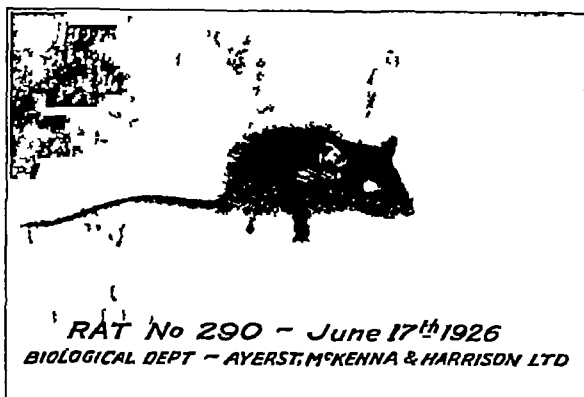
The anti-rachitic (Vitamin D) potency of the oil is determined by observing its value in promoting recalcification in the tibia of animals suffering from experimental rickets. "Ayerst" Cod Liver Oil is standardized to 75 Vitamin D units per Gm or better.

The photographs of Rat No 290 on different dates show the reconstructive value of Biologically Standardized Cod Liver Oil

ANOTHER IMPORTANT FACT!

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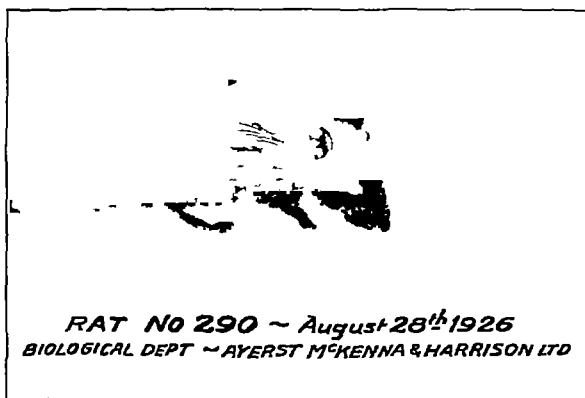
In original 4 ounce and 16 ounce bottles only, to assure against loss of potency or impairment of its fine flavour



Born May 17 On normal diet with mother until June 17 Weight 30 grams



July 24 After 38 days on a devitaminized diet (from June 17 to July 24) Weight 34 grams



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MONTREAL

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CANADA

Vancouver was supervised by a Milk Commission composed of members appointed by the association

Dr D J Miller, formerly on the staff of the Workmen's Compensation Board and more recently of Powell River, has taken up practice in North Vancouver

We very much regret to inform our readers that Mr C J Fletcher, the indefatigable Executive Secretary of the British Columbia Medical Association, is in poor health and will be absent from the office for some months

Dr F Stainsby, formerly of West Vancouver, has left for Mayo, Yukon Territory, where he will engage in practice

Dr R J Wride, of Athlun, has been appointed Superintendent of the Whitehorse General Hospital

Dr G A C Roberts and Mrs Roberts left last week for Queen Charlotte City, where the doctor intends to practice in future

Dr Richard H. Mason, of Clinton, has taken over Dr E A Campbell's practice at Bella Coola, B C
J EWART CAMPBELL

UNITED STATES

The American College of Surgeons will hold the eighteenth Clinical Congress in Boston, October 8th to 12th. Headquarters will be at the Statler Hotel and the meetings will be held in the ballroom of the Copley Plaza Hotel and Symphony Hall. The Hospital Standardization Conference will be held in morning and afternoon sessions in the ballroom of the Copley Plaza Hotel Monday, Tuesday, Wednesday, and Thursday

An innovation this year will be the commencement of the clinics in the Boston hospitals on Monday afternoon, continuing through the mornings and afternoons of the following four days. Monday evening's program will include an address of welcome by the local chairman, the address of the retiring President, Dr George David Stewart, New York, the inaugural address of the new President, Dr Franklin H Martin, Chicago, and the John B Murphy Oration on surgery by Professor Vittorio Putti of Bologna, Italy. Tuesday, Wednesday and Thursday evenings' sessions will be held in the ballroom of the Copley Plaza Hotel. At the Wednesday evening meeting the visiting surgeons will be the guests of the Boston Surgical Society at a special meeting, when the Bigelow medal is to be awarded. On Friday evening, the Annual Convocation of the College will be held in Symphony Hall when the 1928 class of candidates for Fellowship in the College will be received. The Fellowship Address on this evening will be delivered by Dr William J Mayo. The annual meeting of the Governors and Fellows will be held Friday afternoon and will be followed by a symposium on Traumatic Surgery, to be participated in by leaders in industry, labour, indemnity organizations, and the medical profession. Ether Day will be celebrated in the Dome Room of the Massachusetts General Hospital on Friday, when a bronze bust of William T A Morton will be presented to the hospital. It was in this building that ether was first administered for the production of surgical anaesthesia on October 16, 1846. Several newly completed medical motion pictures, produced under the supervision of the American College of Surgeons and approved by it, will be shown during the Congress.

Reduced fares on the railways of the United States and Canada have been authorized to those holding a convention certificate, so that the total fare for the round trip will be one and one half the ordinary first class one way fare. Other outstanding features will be the exhibits. In addition to the commercial exhibits the departments of the College will present scientific exhibits. A number of distinguished foreign guests of international reputation have signified their intention of attending. The Chairman of the Boston Committee on Arrangements is Dr Frederic J Cotton.

Considerable interest has been shown by the medical profession throughout the country in the first "Graduate Fortnight" of the New York Academy of Medicine, on the problem of aging and of old age, which is scheduled for October 1st to 14th, with two sessions daily at the Academy, and clinical demonstrations and lectures of thirty teaching hospitals.

Among the speakers to be present from abroad are Sir Farquhar Buzzard, Regius Professor of Physic at Oxford, and Dr Vittorio Putti, orthopaedic physician of Bologna.

Two sessions daily will be held at the Academy, comprising the following program:

October 1st Afternoon Opening Session Introductory Remarks. Dr Samuel W Lambert, President, New York Academy of Medicine. Dr Louis I. Dublin, Statistician Metropolitan Life Insurance Co. The treatment of arthritis deformans of the hip, Professor Vittorio Putti, Institute Rizzoli, Bologna, Italy.

Evening The doctor—Trainer or healer? Dr George E Vincent, President, Rockefeller Foundation. Carpenter Lecture. Pathological processes in aging. Dr Aldred S Warthin, Professor of Pathology, University of Michigan.

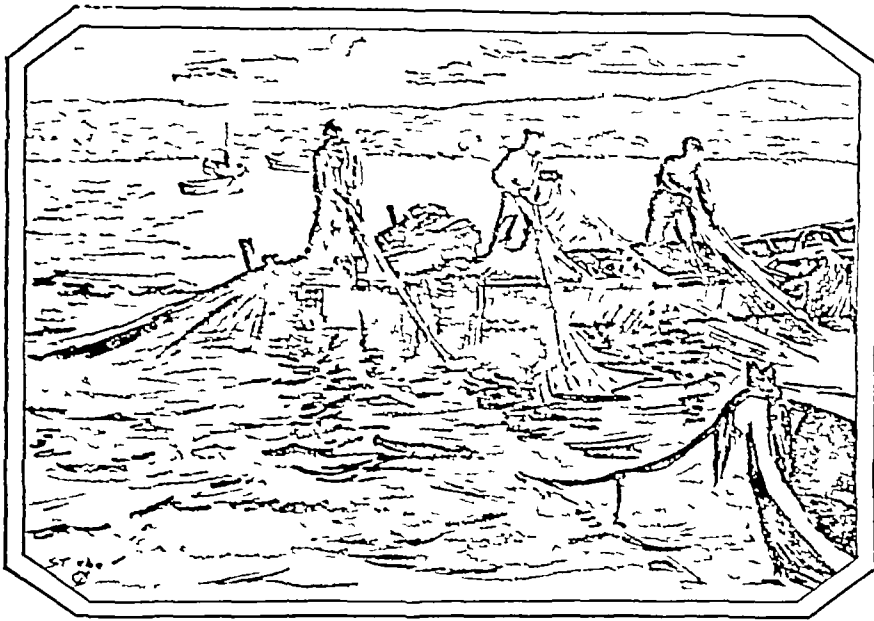
October 2nd Afternoon. Importance of anatomical pathways in diseases of middle life and old age. Dr Harrison S Martland, City Hospital, Newark. Postponement in the individual process of aging. Dr Linsly R Williams, President, New York Tuberculosis and Health Association. Clinical aspect and management of old age from the practitioner's point of view. Dr Charles F Collins, New York City.

Evening Syphilis in elderly persons. Dr George M MacKee, Professor of Dermatology and Syphilology, Post Graduate School. Diseases of the skin in old age. Dr Howard Fox, Professor of Dermatology, New York University.

October 3rd Afternoon Arterial diseases of the brain and cord. Dr Foster Kennedy, Professor of Clinical Neurology, Cornell University. Spinal cord diseases. Dr Edwin G Zabriskie, Att Physician, Neurological Institute.

Evening The aging of the heart muscle regarded from a general biological point of view. Dr Alfred E Cohn, Rockefeller Institute. Dr Alexis Carrel, Rockefeller Institute. Arteriosclerosis and aneurism. Dr E J G Beardsley, Associate Professor of Medicine, Jefferson Medical College, Philadelphia.

October 4th Afternoon Dietetics in old age. Dr Samuel A. Brown, Professor of Pharmacology, New York University. Pharmacology in old age. Dr Alexander Lambert, Visiting Physician, Bellevue Hospital. Alcohol in old age. Dr Samuel W Lambert, President New York Academy of Medicine.



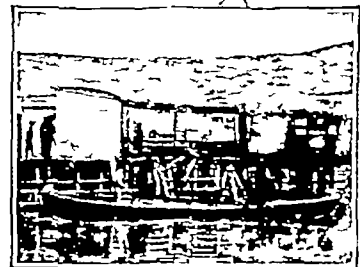
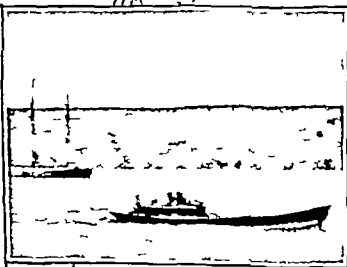
Newfoundland Fisheries...Source of Mead's Standardized Cod Liver Oil

CONTRARY to the practices of other fisheries, the Newfoundland cod is caught in traps set from only one-half to one mile from shore. Only an hour or so of time, often less, elapses after the fish are caught until they are on the landing stages of the Mead Johnson and Co. rendering plants that dot the coast. 'An hour or less'! That means fresh livers only are used in the preparation of Mead's Standardized Cod Liver Oil.

Three thousand miles of rocky shore line on the Newfoundland coast afford ideal feeding grounds for the cod. Numerous indentations and small bays abound with caplin and other small fish, constituting the cod's chief food. It is the abundant food supply along the Newfoundland coast that supplies the high vitamin potency of this particular Cod Liver Oil.

Newfoundland Cod Liver Oil

THUS Newfoundland is particularly well suited for the production of a highly potent cod liver oil. This fact was first established in 1921 and 1922 by the investigations of Mead Johnson and Co. Subsequent researches and comparison with other oils have amply verified these original findings.



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BELLEVILLE, ONTARIO

Evening The relation of disorders of ductless glands to senescence Dr William Engelbach Engelbach Clinic, St Louis, Missouri Menopausal and post menopausal conditions in women Dr Benjamin P. Watson, Professor of Obstetrics and Gynaecology, Columbia University Sir Farquhar Buzzard, Regius Professor of Medicine, Oxford

October 5th Afternoon Gastro enterological problems Dr Arthur F. Chace, Professor of Medicine, Post Graduate School Food and food habits Dr Solomon Strouse, Associate Professor Medicine North Western University

Evening Traumatic surgery and the problems of age Dr John T. Moorhead, Professor Traumatic Surgery Post Graduate School Osteomalacia and Paget's disease Dr Edwin Allen Locke, Clinical Professor of Medicine, Harvard University The conditions of the rectum in old age Dr Jerome M. Lynch Professor of Proctology, Polyclinic

October 8th Afternoon Pneumonia in old age Dr William R. Williams, Attending Physician New York Hospital Bronchitis and asthma Dr Frederick T. Lord, Boston

Evening Tuberculosis Dr Lawson Brown Saranac Lake Climate and the aged Dr Gerald B. Webb, Colorado Springs Psychoses in old age Dr Menas S. Gregory Director of Psychopathology Bellevue Hospital

October 9th Afternoon X-ray and radium in the problem of old age Dr Francis Carter Wood Director of Radiological Therapeutics St. Luke's Hospital Special aspects of neoplasms in the aged Dr James Ewing Professor of Pathology Cornell University Diseases of the arteries of the extremities Dr Leo Buerger Attending Surgeon Bronx Hospital

Evening Aging of the human brain Dr Frederick Tilney, Professor of Neurology Columbia University Apoplexy Dr Bernard Sachs Consulting Neurologist, Mt. Sinai Hospital

October 10th Afternoon Hypertension Dr Herman O. Mosenthal, Director of Department of Medicine Post Graduate School Nephritis in old age Dr Nellis B. Foster Associate Professor of Medicine, Cornell University

Evening Harvey Lecture Senescence and rejuvenescence from a biological standpoint Professor C. M. Child University of Chicago Present status of the problem of the so called rejuvenation Dr Charles R. Stockard Professor of Anatomy, Cornell University

October 11th Afternoon The myocardium Dr John Wackoff Clinical Professor of Medicine New York University Angina pectoris Dr Harlow Brooks Professor Clinical Medicine, New York University

Evening Infectious diseases and old age Arthritis and old age Dr Russell L. Cecil Visiting Physician Bellevue Hospital

October 12th Afternoon Liver and biliary passages Dr Franklin W. White Instructor in Medicine Harvard University Digestive problems Dr Thomas R. Brown Associate Professor of Clinical Medicine Johns Hopkins University

Evening Carcinoma of the larynx Dr John L. MacKenzie Senior Surgeon Manhattan Eye Ear and Throat Hospital Diseases of the eye in old age Dr William H. Wilmer Professor Ophthalmology Johns Hopkins University

Programs of special clinics and clinical demonstrations have been arranged in thirty hospitals which are co-operating in the fortnight

The facilities for the study and teaching of medical history at Johns Hopkins University are to be greatly extended. A fund of \$2,000,000 is to be expended on an initial building and its endowment. Part of the scheme is the establishment of the Welch Medical Library and Department of Medical History which is intended to foster historical research and provide a cultural background for the medical profession.

Prof. W. H. Welch is now in Europe collecting medical historical works and other mementoes of interest in connection with the development of the medical profession.

Mr. Edward B. Bobinette of Philadelphia has presented the University of Pennsylvania with a gift of \$250,000 for the establishment of a foundation for the study of the prevention of diseases of the cardiovascular system. It is expected that the fund will eventually reach \$1,000,000. Mr. Bobinette also will present at least \$500,000 to the University fund for the development of education.

It has been announced that Mr. Abram E. Fitch, of New York City, has donated \$1,000,000 to Yale University as a memorial of his son. It is intended for the development of the study of diseases of children and of child life.

Dr. W. M. L. Cohn, formerly Professor of Pathology at Jefferson Medical College and author of an outstanding textbook on his subject, died at Atlantic City on May 20th in his sixty-fourth year.

A graduate of Jefferson in 1880, he became professor of pathology in that institution in 1890. In 1892 was appointed pathologist to the Philadelphia Hospital, a position that he held till his death and was also President of the Faculty. During the World War he served as a colonel in charge of Base Hospital 38 in France.

Dr. Cohn wrote much on pathology, bacteriology and sanitation and had an international reputation for his work in preventive medicine.

GENERAL

Second International Congress of Radiology

This year Stockholm entertained the radiologists of the world at the Second International Congress.

Our welcome to Sweden cannot be too heartily stressed, as not only the City of Stockholm but the whole Kingdom of Sweden lavished hospitality on the delegates. The Crown Prince officially opened the Congress in the stately concert hall of Stockholm and subsequently was an attentive and interested listener on several occasions.

Eight hundred delegates were present, many of whom were accompanied by their families. Noticeable were physicians from as far away as Japan,

China and Australia. The United States and Canada were represented by large delegations. The Canadians present were Drs. W. A. Bauld, Montreal, Gordon, Montreal, C. M. Harty, Regina, A. S. Kirkland, Saint John, McNeill, London, H. MacIntosh, Vancouver, Malcolmson, Edmonton, A. Pirie, Montreal, Proulx, Vancouver, Quint, Calgary.

The first noteworthy feature was the exactness and perfection of the details of the preliminary organization, largely due to the ability and industry of Dr. Axel Renander and his associates. Every visitor to Stockholm will carry away the memory of his experience there as an example of perfect arrangement.

Weston's DIGESTIVE



A "whole meal" biscuit endorsed by doctors and dietists

Weston's DIGESTIVE is a real "health biscuit" made from the original old English recipe of the largest selling health biscuit in the world.

It contains, in delicious palatable form, mild laxative qualities especially suited to convalescents. Weston's DIGESTIVE is the only "fancy biscuit" many dyspeptics can eat.

George Weston Limited, Toronto
Makers of "Biscuits as they are made in England"



The basis of such perfection was laid three years ago, and the work will be finished this fall in the publication of papers and reports in *Acta Radiologica*.

Entertainment was more lavish than could reasonably have been expected. The King and Queen of Sweden held an afternoon reception for the delegates and their ladies at the Royal Palace. The official delegates were dined by the Corporation of Stockholm in the Town Hall which, by the way, is one of the most magnificent examples of Scandinavian architecture. Many private homes were opened for more personal entertainment. The social side of the Congress was concluded by a dinner and dance at which about twelve hundred people were guests.

The scientific papers will be reported in current x-ray papers and in the various allied publications. It will, therefore, suffice here to say that most valuable contributions to the science of radiology were provided by many speakers from many lands. The official languages were French, German and English.

The exhibition of new equipment was extensive and was housed in the Stockholm Art Gallery. The apparatus included much that was novel, and inspiring impressions were received on how much there was being done by the physicist and engineer in aid of our efforts at diagnosis and therapy. The perfection of the Philips and Mueller x-ray tube was of interest to all.

Simultaneously with the meetings of the general congress a series of committee meetings were convened dealing with first, the standard of x-ray protection, second, standards of protection for radium workers, and, third, the adoption of a standard of x-ray dosage. The British committee reported a series of proposals for protection from x-ray and radium emanation which were adopted. The Swedish committee collaborated on the several safeguards for radium workers and their report was also officially adopted. The suggested standardization of x-ray dosage was accepted. The details will be published later.

As Canadians, we returned home satisfied that much of our work is being well done and determined that in other departments improvements are necessary and that new methods will be given a fair trial.

At the Congress it was announced that the King of Sweden had received, on the occasion of his seventieth birthday, a gift of five million Swedish Crowns, as a token from the Swedish public, of their esteem and love for their Sovereign. The King graciously passed this rich gift to the Radium Institute, the Radium Hemmet, to be used for the further investigation and possible cure of cancer.

The rest of the world owes much of the knowledge of radium to the Swedish therapists under the inspired leadership of Dr. Gustaf Forsell, who was the President of the Convention just closed.

A. STANLEY KIRKLAND

A Gala Day at the Severance Union Medical College, Seoul, Korea

It is not given to many men to see statues of themselves erected during their lifetime. Within the last few weeks this good fortune has come to Marshall Poch. Now we hear of another instance, this time in the case of a man devoted to the arts of peace, Dr. O. R. Avison, President of the Severance Union Medical College.

Dr. Avison was born in Yorkshire, England, sixty-eight years ago. Coming to Canada early in life, he received his education at the high school, Almonte, later taking a teacher's certificate. He graduated from the Ontario School of Pharmacy in 1884 and from the Toronto School of Medicine in 1887. For a time he was on the teaching staff of the Medical Faculty of Toronto University, as well as that of the

College of Pharmacy. During the same period he built up a large practice. All this he gave up to become a medical missionary in Korea. In August, 1893, he arrived in Seoul, and took charge of the Royal Korean Hospital, which had been established by the Emperor, and was also appointed physician to the Imperial family.

Returning to America in 1899 he spoke at a Mission Conference in New York on the necessity of establishing a medical school in Korea for the training of native medical men. A man sitting in the balcony of the hall seemed to be paying close attention to what was being said. At the close of the meeting he came to Dr. Avison and asked him if he had his plans for the medical school. Dr. Avison replied that he had. "Then," said the man, "go ahead with them." He was Louis H. Severance. With a gift of \$25,000 from Mr. Severance the first hospital building was erected in 1904. In 1909 Mr. Severance donated a further gift of \$35,000, to provide a building for the medical school.

In 1917 the medical college was recognized by the government, and in 1923 was further accepted as fully qualified to graduate students in medicine who might practice without other examination by the government.

As the result of another campaign in America in 1924 Dr. Avison was enabled to secure funds for a new hospital, which was erected this year.

Dr. Avison has received many honours at the hands of the Koreans, as well as honorary degrees from Toronto University (M.D.) and Wooster, Ohio (LL.D.).

The twentieth of March, 1928, was signalized in Seoul by a triple event, the unveiling of a statue to Dr. Avison, President of the Severance Union Medical College, the graduation of doctors and nurses from the Medical School, and the opening of the new wing of the hospital. The Severance Compound presented an animated scene when hundreds of relatives and friends of the students and the school came from far and near to attend the exercises.

Dr. S. H. Hong, President of the Alumni, presided at the unveiling ceremony and made a very appreciative speech, in English and Korean. The statue bears the following inscription in English, as well as one in Chinese—

"O. R. Avison, Pharm. G., M.D., C.M., (University of Toronto, Hon. Causa), LL.D. Born in England, educated in Canada, Medical Missionary to Korea since 1893 (under the Board of Foreign Missions, Presbyterian Church in U.S.A., but the Servant of all the Missions of the Christian Church), President of Severance Union Medical College, Seoul, Korea. Dr. Avison's Students, the Alumni of Severance Union Medical College, have erected this statue as an expression of their appreciation of his love, of their gratitude for his great work for Korea and of their intention to continue the same kind of service to their people in the Name and Spirit of the Lord Jesus Christ, 1927."

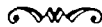
A congratulatory address was delivered by Byron Yun Tehu Ho, which was a gem of humour, pathos, and brevity. It ran as follows—

"Dr. Hong asks me to make a long English speech and then to translate it into Korean—and all this in three minutes. If I could accomplish all that, as Dr. Hong desires, I should deserve a statue myself."

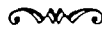
"Dr. O. R. Avison has done three wonderful things during the thirty-five years past. When he took charge of the Korean Government Hospital, he found in it one patient and forty 'chuses' or officials. We can easily see what a time he must have had in dealing with such a situation. He would probably have found it easier to handle forty patients and one chuse. Out of that unpromising beginning he has literally created this splendid Severance Hospital that we see to day."

VACCINATION AGAINST DIPHTHERIA

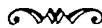
For the five-year period 1920-25 in the Province of Ontario, *one death in every six* among children between 2 and 14 years old was due to diphtheria



The majority of deaths from diphtheria occur during the months of the school year.



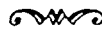
Diphtheria may be prevented by the use of Diphtheria Toxoid (Anatoxine-Ramon)



Diphtheria Toxoid as developed by Ramon of the Pasteur Institute, Paris, results from the incubation of diphtheria toxin with formaldehyde. It is a particularly stable, accurately standardized antigen which is *absolutely non-toxic*. It contains no serum and is therefore incapable of inducing sensitization to anti-toxins or sera



In the past three years, diphtheria toxoid has been administered to approximately 500,000 individuals in the Dominion of Canada. Three subcutaneous doses, with an interval of three weeks between doses, have been found to give highly satisfactory results



Diphtheria Toxoid (Anatoxine-Ramon) is available in 1-person, 6-person and 12-person packages. Information regarding its use will gladly be supplied upon request

CONNAUGHT LABORATORIES
University of Toronto

Toronto 5

32

Canada

"He started a medical school without text books, and, worse still, without a vocabulary to convey his ideas. Yet in spite of all these difficulties and discouraging circumstances he has created a medical school which is a prince of its kind, not only in Korea but in all the Far East."

"The third wonderful thing he has done is this, anyone who has accomplished such great tasks may well become famous as Dr Avison is to day, but the wonder is how he could have managed to become famous and fat at the same time."

"It was very thoughtful on the part of the Alumni Association of the Severance Medical College to express their appreciation and gratitude in the form of a statue for the man whom they love and honour. Some think it is not quite orthodox to erect a statue for a man while he is living. But orthodox or heterodox, I think it more rational to strew some flowers on the paths which a man walks on than to heap floral crowns on his coffin."

"There is one thing I wish the Alumni Association had found feasible to do, that is to have erected another statue by the side of the doctor's for Mrs O R Avison. I suppose they thought it unnecessary since the fact that she has made it possible for the doctor to do his great life work so well, and the fact that she has given two missionary sons to Korea are sufficient memorials for her, better than can be expressed in bronze or marble. I thank you, Dr and Mrs Avison, in the name of the Korean people, for the great service you have done for us."

Immediately after this ceremony graduation exercises took place, eight receiving degrees in medicine and three diplomas in nursing. The graduates of the school, since its inception, number 175 in medicine and 77 in nursing.

The new hospital wing, the gift of Mr J L Severance, Mrs F P Prentice, and a few other donors, was then dedicated, and formally opened by Mrs O R Avison.

The gifts of the Severance family to this remarkable college and hospital have amounted to 500,000 yen, in addition to which they contribute about 47,000 yen annually to the budget of the institution.

Courses at Paris

The following is the program of the post graduate courses in medicine that are to be given in English in Paris next autumn, under the auspices of the Dean and the Faculty of Medicine of the University.

PROPEDEUTIC MEDICAL CLINIC

October 29th to November 3rd, inclusive
In the morning practical demonstrations will be given at the bedside, under the guidance of Professor Emile Sergent. The afternoon will be devoted to theoretical instruction.
Dr F Bordet, Lipiodol in the diagnosis of diseases of the respiratory tract.
Dr Oury. Bronchial forms of pulmonary tuberculosis.

Dr Turpin. Carcinoma of the bronchi.
Dr Kourilsky. Lung abscess. Bronchiectasis.
Dr Benda. Bronchial forms of pulmonary syphilis.
Fee 500 francs

CARDIOLOGY

October 20th to 30th inclusive
Prof Antonin Clere. Coronary obliteration in pathology, Practical demonstrations (clinical, anatomical, electrocardiographic, etc). The cardiac complications of pregnancy, Pathological ventricular rhythms, Syndromes referable to the pulmonary artery, Ouabain in cardiac therapeutics.
Fee 500 francs

PÆDIATRICS

October 8th to 20th, inclusive
Dr Weil Halle. The healthy child. Puericulture and its organization in France, Operation of the School of Puericulture, Feeding of infants, Diet kitchen, practical work, Infantile hypotrophy, Thymus hypertrophy, Vaccination against diphtheria, The so called acetonaemic vomiting, Bases of vaccination against tuberculosis, Practice of anti tuberculosis vaccination with BCG.

Dr Armand Delille. Organization of children's hospitals in Paris, Acute adenoiditis and otitis in infants, Broncho pneumonia, Pulmonary gangrene, Bronchiectasis, Intratracheal injections of lipiodol, and radiological examinations, Measles and its complications, Early stage of tuberculosis in children, Bacteriological diagnosis of tuberculosis in children, Artificial pneumothorax in children, Local tuberculosis in children, with the value of heliotherapy and actinotherapy, Types of anemia in infants.
Dr Pierret. Hydromineral treatment of lymphatic states in children.

Fee 1,000 francs SURGERY OF THE DIGESTIVE TRACT AND LIVER

October 15th to 20th
Professor Antonin Gosset. Duodenal ulcer, Carcinoma of the pylorus, Appendicitis and its complications, Cholecystitis, Gall stone in the common duct, Surgery of the colon, Clinic with radiographic projection and pathological specimens.
Professor Gosset will also conduct operations and give technical demonstrations on surgical procedure at the Sulpétrière.

In the afternoons, at the "Ecole pratique de la Faculté de Médecine," a course in operative surgery will be conducted on the cadaver, under the direction of Dr Marcel Thalhimer. Each attendant will perform on the cadaver the operations demonstrated the same morning with the technique of Professor Gosset. Lessons on the anesthetized dog may take place in the Laboratory of Experimental Surgery, provided the attendance is sufficiently large.

Fee 500 francs

THE SURGERY OF THE EYE

Drs Morax, Magitot, Bolack, and Hartmann. Ten lessons on this subject will be given, beginning on October 2nd, with exercises on the human cadaver and pig's eyes. Each attendant will perform the operations. Only a limited number can be accepted. These lessons will be given every other day, lessons in Oto rhino laryngology will be given on the intervening days.

Fee 500 francs

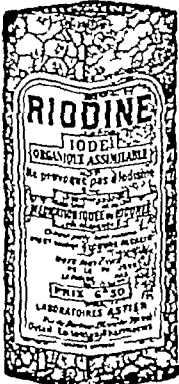
THE SURGERY OF THE EAR, NOSE, AND THROAT

Professor F Lemaitre, Drs Aubin, Maduro, and Remy Neris. These lessons will begin on October 3rd, and each attendant will have opportunity to perform operations on the human cadaver and on the dog.
Only a limited number of pupils can be accepted.
Fee 500 francs

A certificate, signed by the Professor and the Dean of the Faculty of Medicine of Paris, will be given after each course to every doctor who has attended it regularly.

The King of Sweden's Birthday Present

It is estimated that the King of Sweden's seventieth Birthday Gift Fund, which, by his Majesty's wish, is to be applied to cancer treatment and research, already amounts to £300,000. An interesting contribution to the fund was the £300 received from the Quillavote tribe of North American Indians, of which Prince Wilham of Sweden, Duke of Sudermannia, was made a chief, with the title of "Lone Eagle," during his recent lecture tour in the United States.

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Book Reviews

Creatine and Creatinine Andrew Hunter, M.A., M.B., F.R.S.C., Professor of Biochemistry in the University of Toronto 281 pp 14 shillings Longmans, Green & Co., Ltd., London, New York, Toronto, Calcutta, Bombay, and Madras, 1928

Biochemistry, although the most recent division of science, is already amongst those possessing a most prolific literature. It is impossible for any biochemist, whole of the literature of the subject. Monographs dealing authoritatively with different phases are therefore obviously a necessity. The series of monographs edited by Dr Plimmer and Sir F. G. Hopkins is the earliest and most complete of such attempts to cover the subject, and the present volume is a valuable addition to it.

Creatine and creatinine, the one a constant and important constituent of muscle, the other a constant and important constituent of urine, have long provided puzzles to biochemist and physiologist, both as to the source of creatine, and its function whereby creatinine is formed as an excretory product. These puzzles have in large part still to be solved, although the recent discovery that creatinine exists in muscle mainly as a creatine phosphoric acid of peculiar constitution, whose dissociation and recombination are intimately connected with muscle function, suggests that more complete solutions of the puzzles will shortly be forthcoming. Although this work is so recent that only a brief mention of it in an addendum was possible in Dr Hunter's book, yet anyone wishing to appreciate its significance properly, and to watch with understanding the unravelling of these important problems, will find the work a necessity.

The book consists of nine chapters, four devoted to an accurate statement of the known chemical facts and the biological distribution of creatine and creatinine, and the remainder to a cautious and critical but fair survey of the facts concerning the metabolism of these compounds, and the various theories that have been put forward concerning this metabolism and their function. A complete bibliography is appended.

The book is of course an essential addition to the library of the biochemist. Others interested in biochemical problems will find in it a clearly written and interesting account of an important phase of the chemical processes of the living organism.

A. T. CAMERON

Atlas of Human Anatomy Dr Johannes Sobotta Edited from the Sixth German edition by J. Playfair McMurrich. Vols I, II, and III Profusely illustrated. Price for set of three volumes, \$15.00 G. E. Stechert & Co., New York, 1928

An atlas of human anatomy should aim at supplying a great number of clear original illustrations which can be used for revision work by the student of anatomy and for reference work by the practising surgeon. These two points of view are not coincident. The student requires accurate pictures approximating at times to almost diagrammatic representation of a dissection which will be an accurate guide to him in his operative work, in other words a life like picture. To adhere rigidly to one ideal would depreciate the value of the book for the other class of worker. The artist who executed the illustrations has succeeded in steering skillfully be-

tween the blackboard diagram on one hand and a photographic print on the other. The text which accompanied the original English edition has been pruned, leaving but a reasonable amount of descriptive matter to explain the plates.

It is refreshing to see that the editor has adhered to the B.N.A. as the nomenclature for the book. While one must admit that in places the terminology is cumbersome, there can be no doubt that it has made possible the accurate interpretation of anatomical descriptions in other languages. It seems a great pity that this rational and international nomenclature has not been adopted by many clinical teachers in this and in other countries. Whether this is due to the inertia of age or the conservatism which often ensues after years of didactic teaching, it would be vain to speculate.

J. BEATTIE

Manual of the Practice of Medicine A. A. Stevens, A.M., M.D. 12th edition 657 pages Price \$3.50 London and Philadelphia, W. B. Saunders Co., Toronto, McAnish & Co., 1928

Any publication of this nature which has reached the twelfth edition must meet the hearty approval of a large number of medical readers. It is prepared especially for students but is also a handy book of reference for the general practitioner, being relatively brief but inclusive in its treatment of medical conditions.

There is a chapter at the end of the book dealing briefly with skin diseases, as well as a preceding section on diseases of the nervous system.

C. E. BROWN

Ophthalmoscopy, Retinoscopy and Refraction W. A. Fisher, M.D., F.A.C.S. Second edition revised. 291 pages, 260 illustrations. Price \$4.25 F. A. Davis Co., Philadelphia, 1927

The author has made a sincere and painstaking attempt to condense into a short book, for the benefit of the student and the general practitioner, the three difficult subjects of ophthalmoscopy, retinoscopy and refraction.

The first half of the book deals with the various ocular diseases and their recognition by means of the ophthalmoscope. With the help of an ingenious invention of the author's, a tubular piece of wood representing the eye, and by the use of coloured pictures, the student is enabled, with the ophthalmoscope, to become familiar with the diseases of the fundus. There are some excellent coloured plates of the fundus lesions of the fundus to be studied, and the notes to each plate are short and to the point. The author's method of writing in short paragraphs with headings in heavy type is effective for his purpose of teaching.

There is a chapter on the Field of Vision which every medical man would do well to familiarize himself with, and a helpful chapter on the systematic examination of the eye.

When one comes to the latter half of the book dealing with retinoscopy and refraction the reviewer confesses to a feeling of misgiving. The author begins by insisting that "The fitting of glasses," or in other words retinoscopy and refractions, is easy and belongs to the general practitioner. Whether one agrees with this view or disagrees, a very fair attempt is made to simplify and teach the exceedingly difficult and technical subject of refraction. Optical principles

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are considered, the different kinds of lenses and their use described, with many pages of diagrams of the refractive errors, *viz*, myopia, hyperopia, astigmatism, and presbyopia. The objective use of the retinoscope is described and finally the subjective test by means of the trial case of lenses, even to the fitting of the spectacles themselves.

Besides many coloured plates, the book is well illustrated with drawings and photographs. There might be less confusion to the student were the charts of the visual fields in chapter VI uniform, *i.e.*, all outlined in black.

There are some statements made that are obviously out of date, such as "The use of cylinders in retinoscopy for the estimation of astigmatism is unnecessary." Professor Lindner of Vienna has shown that, on the contrary, the use of cylinders in this connection is of the utmost value. And again "Cycloplegics are rarely if ever, required in patients over forty years of age and never in those over fifty."

There is an interesting chapter by Dr. Von Der Heydt on the examination by red free light, the Gullstrand binocular ophthalmoscope, and the use of the slit lamp.

One can easily catch the enthusiasm of the author in his endeavour to equip the general practitioner with a valuable means of diagnosis of disease, *viz*, the ophthalmoscope, but one cannot without difficulty go so far as to advise him (the busy practitioner) to add as well the tonometer, the perimeter, the retinoscope and the trial frame.

S. O. McMurtry

Transactions of the American Surgical Association
Vol. XL. Edited by John H. Jopson, M.D.
William J. Doran Co., Philadelphia, 1927.

Like many of its predecessors, this volume of the "Transactions" presents the opinions of some of the most prominent surgeons of the present day on a wide variety of surgical conditions. Of the many sections of interest two deserve special mention—anaesthetics and thoracic surgery. The papers on these two subjects and, equally important, their discussion, gives the reader a fairly well balanced digest of present day surgical opinion.

L. H. McKim

Health and Wealth, A Survey of the Economics of World Health Louis I. Dublin, Ph.D., 1928,

Harper and Brothers, New York and London, 361 pp with index.

This book represents a compilation of addresses and articles prepared by Dr. Dublin during the past five years. They are statistical in character but have been written in the popular style and for the lay mind. There are therefore, no references to coefficients of correlation, to probable errors, or to other statistical mysteries. For the physician there is a fund of useful information which is easily understood for it must be remembered that from the standpoint of the statistician the physician is as much a layman as anyone.

Through all the fifteen chapters runs the theme of the prevention of disease. The great cost of disease is discussed and compared with the comparative cheapness of its prevention. From the great wealth of statistical data to which the author has access, material has been selected for strong essays on important social and public health problems of the day. The chapters on infant and child hygiene, on tuberculosis, and on the mortality of the negroes are very optimistic in tone, those on heart disease and cancer less so. The essay on birth control must have caused a disturbance in the ranks of the neo-Malthusians when it was first read at the Sixth International Neo-Malthusian and Birth Control Congress. Dr. Dublin apparently thinks that much of the propaganda for birth control is pernicious and does not hesitate to say so.

The chapter on prohibition gives small comfort to the protagonist of the Volstead Act. It is true that vital statistics have shown a striking reduction in

mortality following the passage of the 18th Amendment, but this could as well be attributed to the influenza epidemics as to decrease in alcohol consumption. One would expect that the improvement in mortality, if due to prohibition, would become cumulative. It should not show its fullest effect at the beginning. The crude death rate of the United States Registration States of 1900 shows the most favourable year from the standpoint of mortality to be 1921, the year following the establishment of prohibition. Since that year the death rate has been rising slightly. When the crude death rate is dissected and specific rates according to age and sex are given, it is shown that the death rates of middle-aged and old males have been increasing very definitely since the low year, 1921. It is pointed out that the death rate from alcoholism has been constantly rising in the United States since the marked fall of early prohibition years. Deaths from alcoholism are now almost as frequent as they were ten years before the prohibition era. It is comforting to Canadian readers to know that the death rate from alcoholism in Canada, according to the experience of the Metropolitan Life Insurance Company, is only about a quarter of that in the United States.

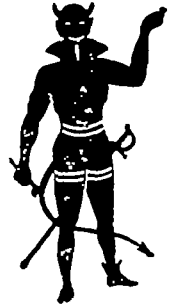
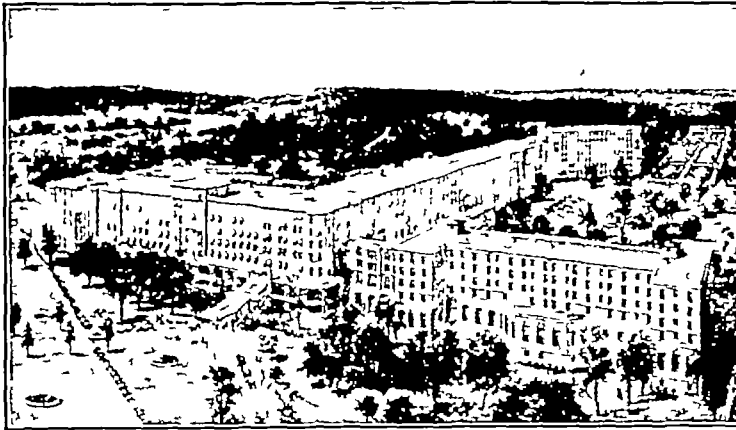
In the final chapter, the author estimates a reasonable life extension goal. Instead of the present expectancy of life at birth in the United States of approximately 58 years, he believes that a life expectancy of nearly 65 years is possible. Nor is this extension calculated solely on a saving of young lives. Dr. Dublin thinks that it is quite reasonable to expect an improvement in the life expectancy of old people. This improvement, it may be stated, does not appear to be taking place at the present time, but with the development of the practice of periodical examination it can be confidently hoped for.

FRANK G. PEDLEY

BOOKS RECEIVED

- Surgical Clinics of North America**, vol. VIII, No. 3
The Chicago Number June, 1928 Philadelphia and London W. B. Saunders Co. Toronto McAllister & Co.
- Sixteenth Annual Report of the United Fruit Company**, Boston, 1927.
- Traitement Biologique des Infections** Dr. Albert Jentzer 424 pages, illustrated Masson & Co., Paris, 1928.
- Nouveau Précis de Bactériologie** G. Delater and Ch. Grandclaude 121 pages, illustrated Gauthier Villars & Co., Paris, 1928.
- Physics Catechism series Part I** 3rd edition 73 pages Price 50 cents The Macmillan Co. of Canada, Toronto, 1928.
- Introduction Biologique à l'Etude de la Neurologie et de la Psychopathologie** 416 pages, illustrated Price 80 francs Librairie Félix Alcan Paris, 1928.
- Transactions of the American Association of Genito-Urinary Surgeons** Vol. XX 347 pages, illustrated Williams & Wilkins, Baltimore, 1927.
- Medical Clinics of North America**, vol. III, No. 6 The Mayo Clinic Number Philadelphia and London W. B. Saunders Co. Toronto McAllister & Co., 1928.
- Mother A Little Book for Men** The Little Blue Book Series, issued by the Department of Health, Ottawa.
- The Twenty-Seventh Annual Report of the Canadian Tuberculosis Association**, 1927.
- Proceedings of the Sixth Canadian Conference on Child Welfare**, 1927. Published at Ottawa, 1928.
- Report of the Department of Health of Montreal 1926**, by Dr. S. Boucher. Published by A. P. Pigeon, Ltd., Montreal, 1927.
- Report on the Health of the Army for the Year 1926** Vol. IXXI Published by His Majesty's Stationery Office, London, 1928.
- Fifth Annual Report on Vital Statistics for the Dominion of Canada, 1925** Published at Ottawa 1927.

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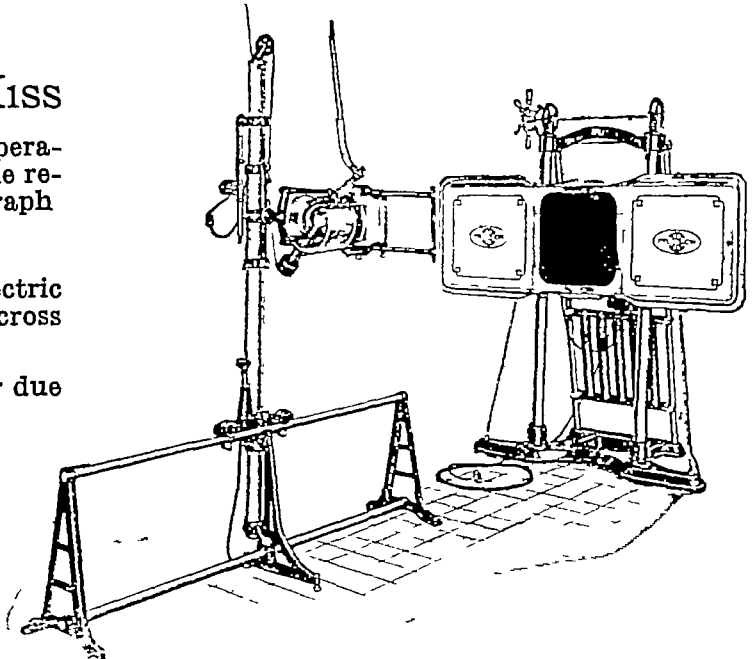
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Will this modern view displace the older explanation? The physician who has followed both sides of the controversy is apt to find the question a puzzling one. But authorities do not disagree on one point: that whatever the reason *why* constipation is dangerous, it still *is* dangerous, that now, as ever, it is of vital concern to keep the intestinal tract *clean*.

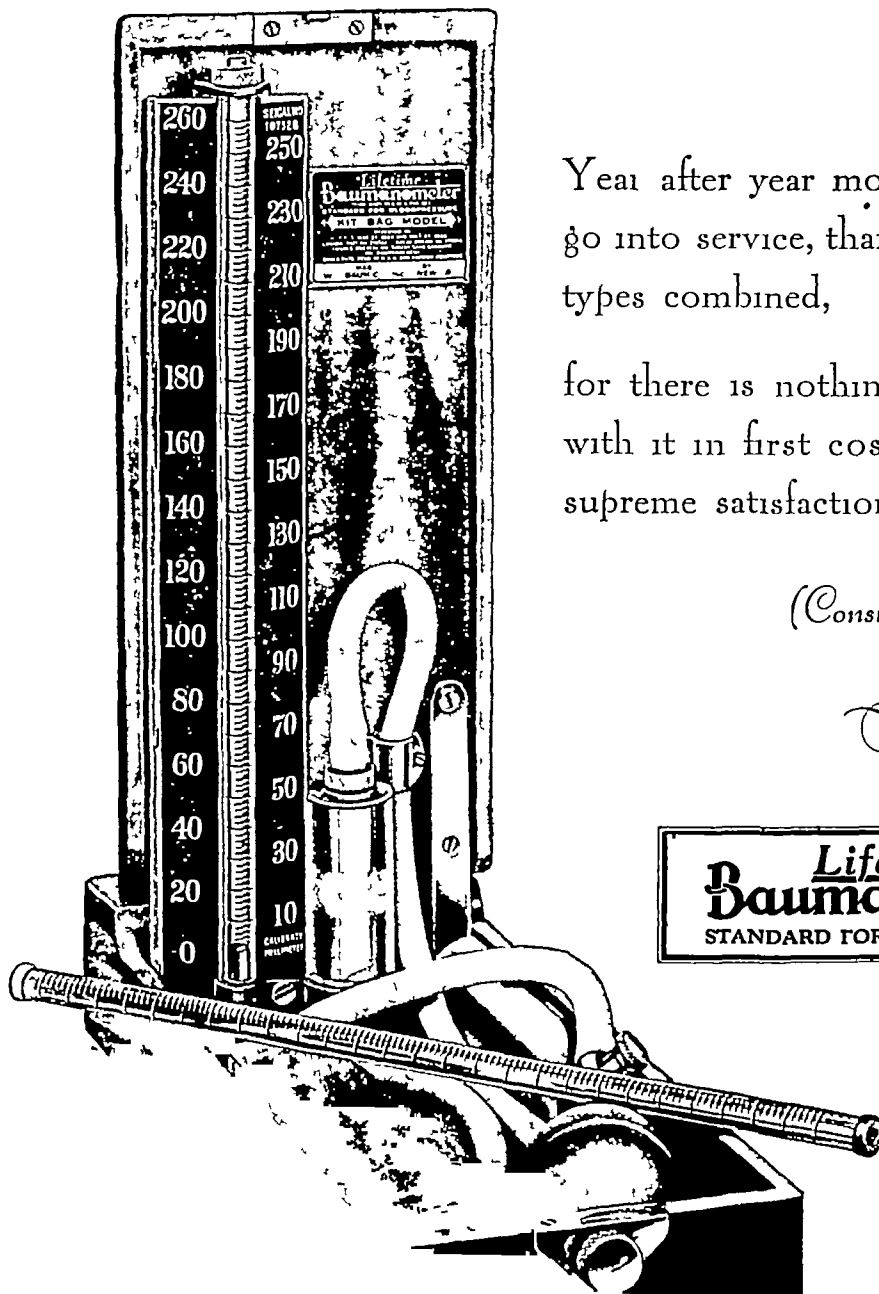
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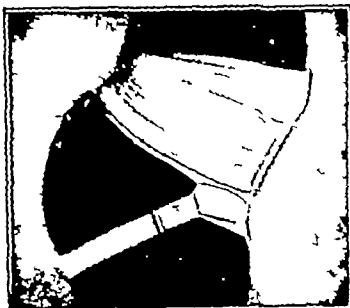
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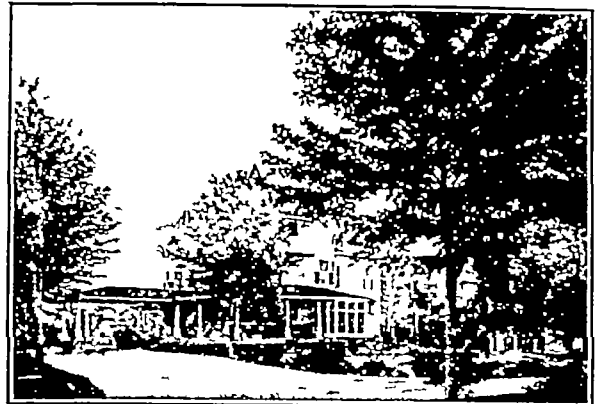
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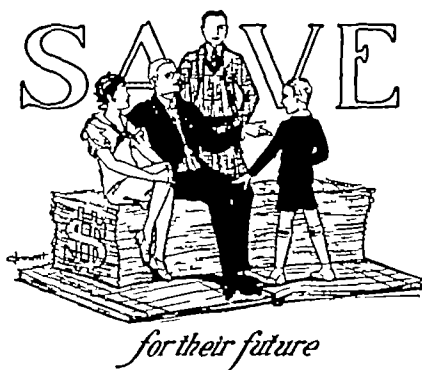
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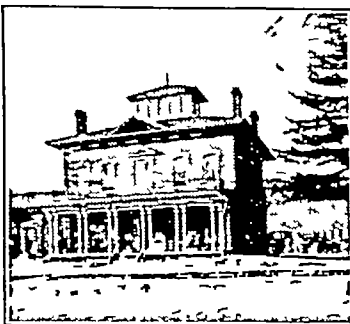
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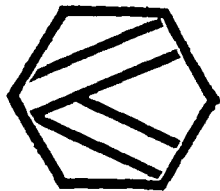
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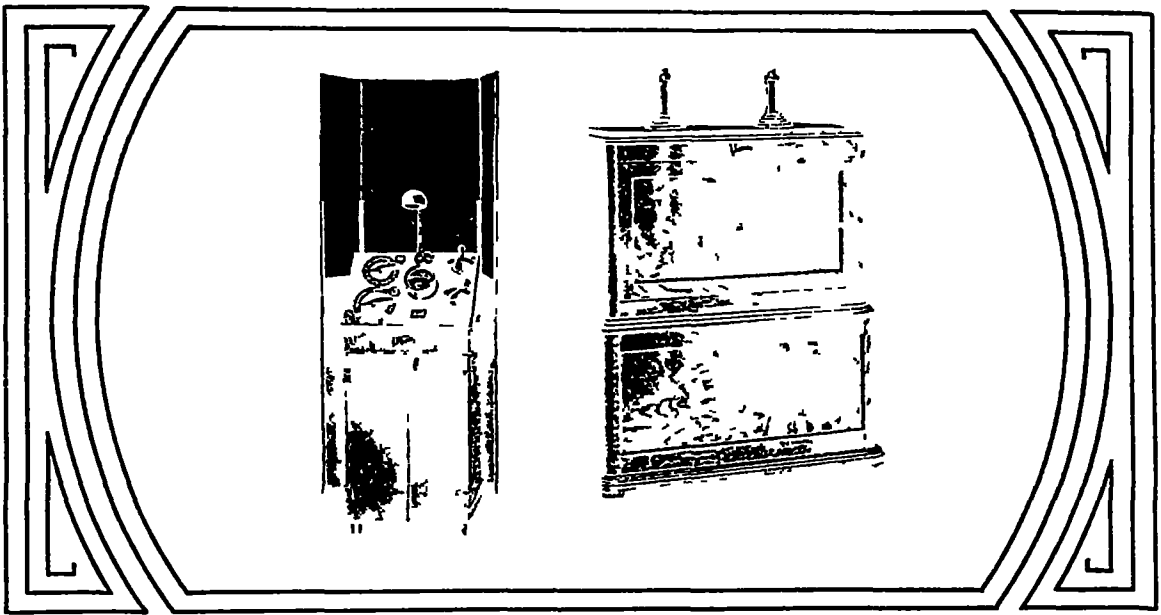
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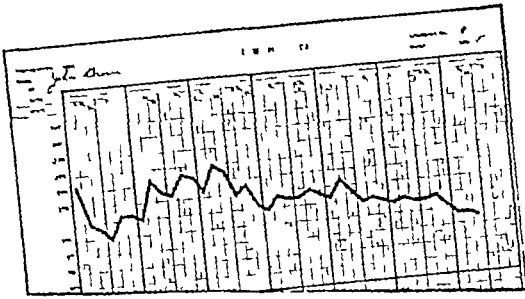
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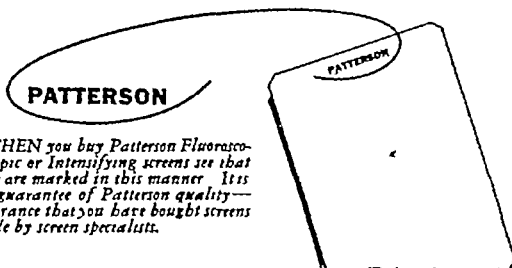
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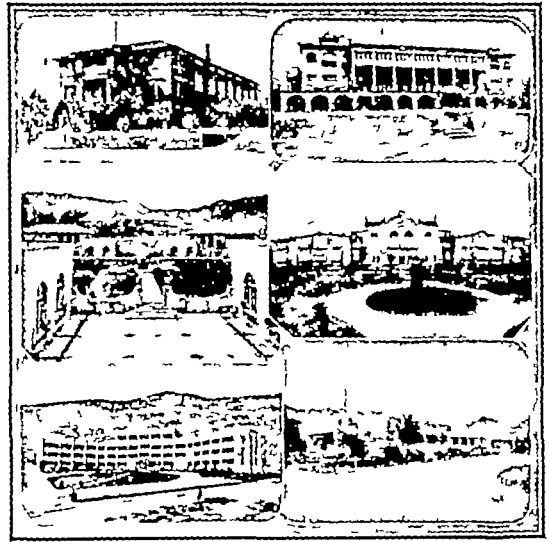
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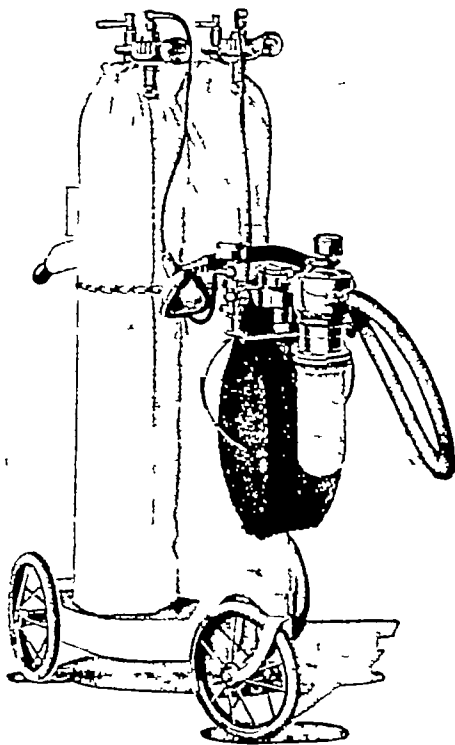
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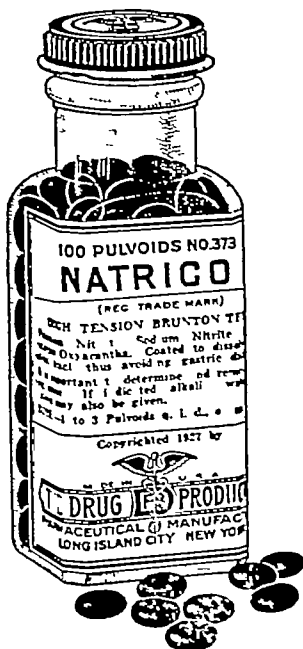
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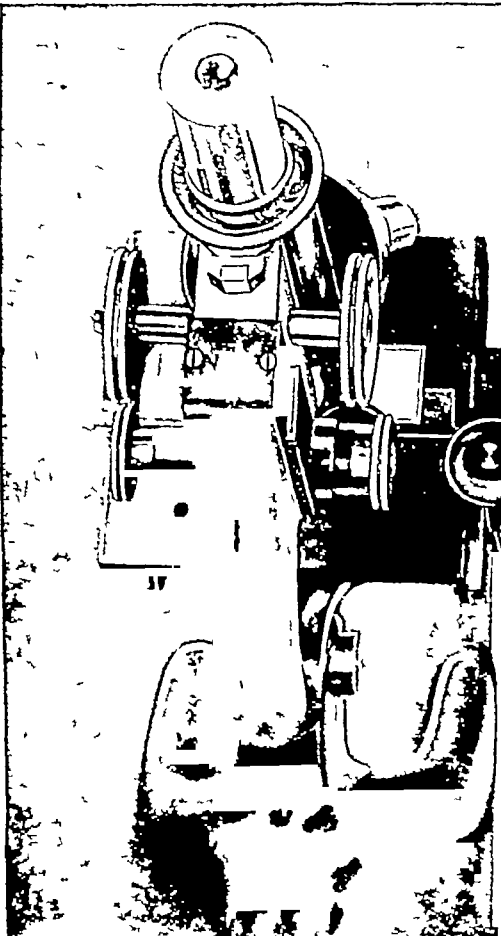
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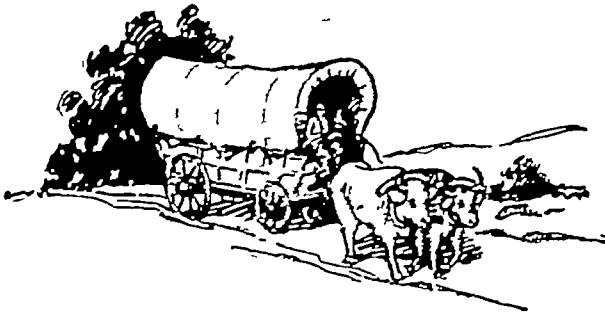
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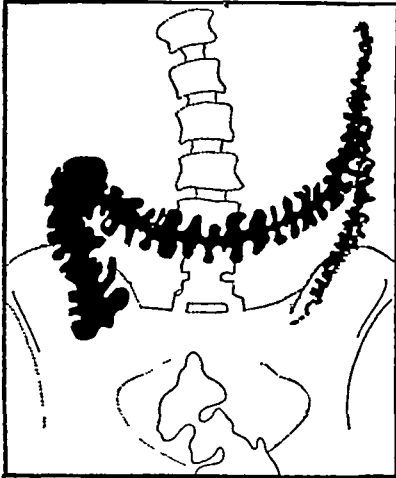
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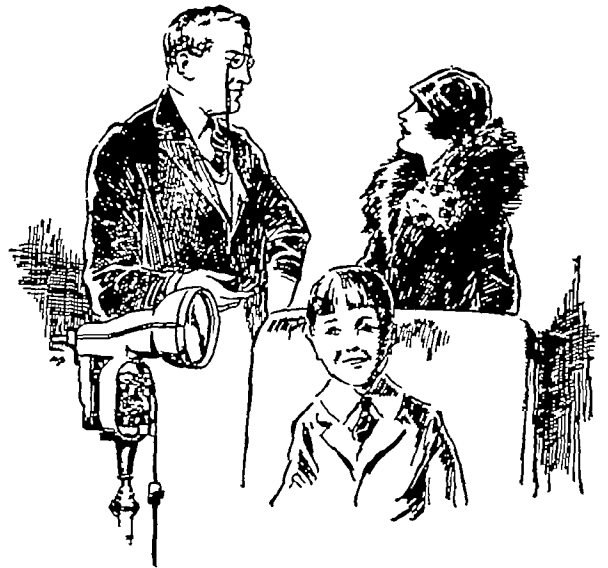
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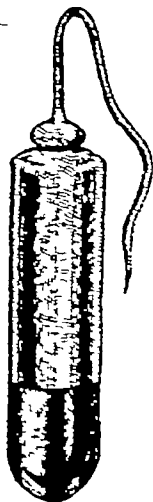
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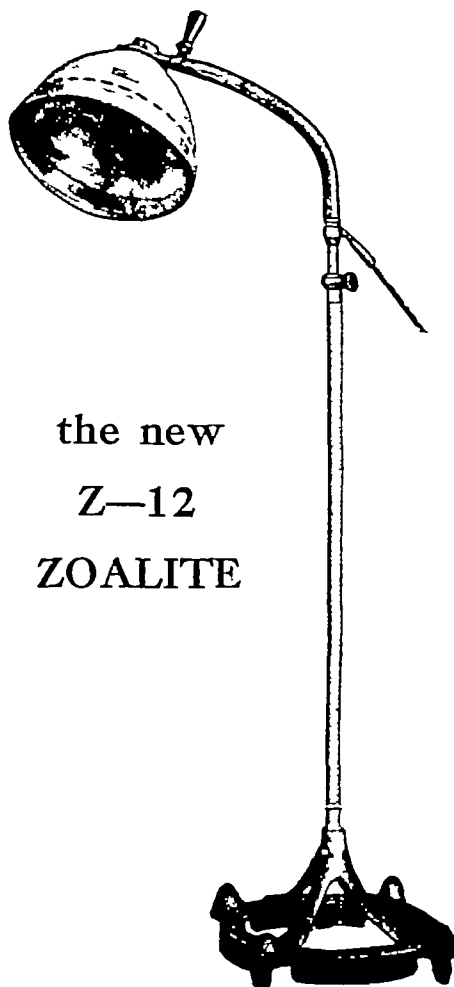
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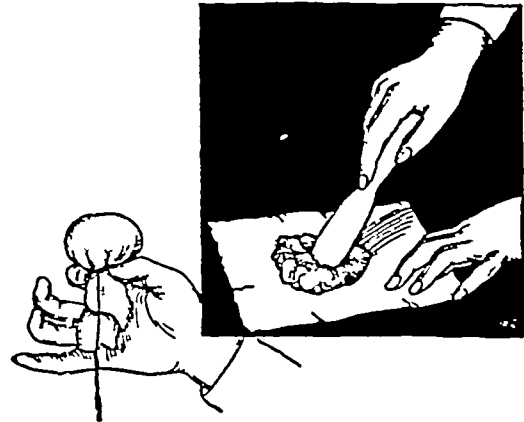
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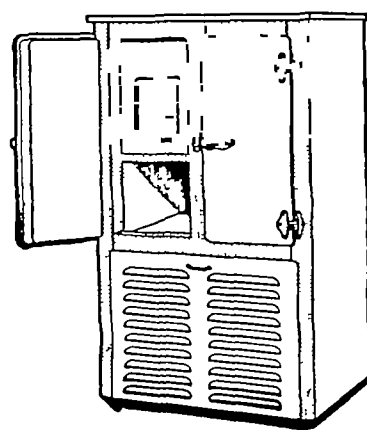
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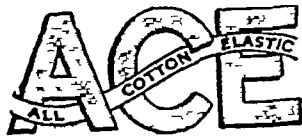
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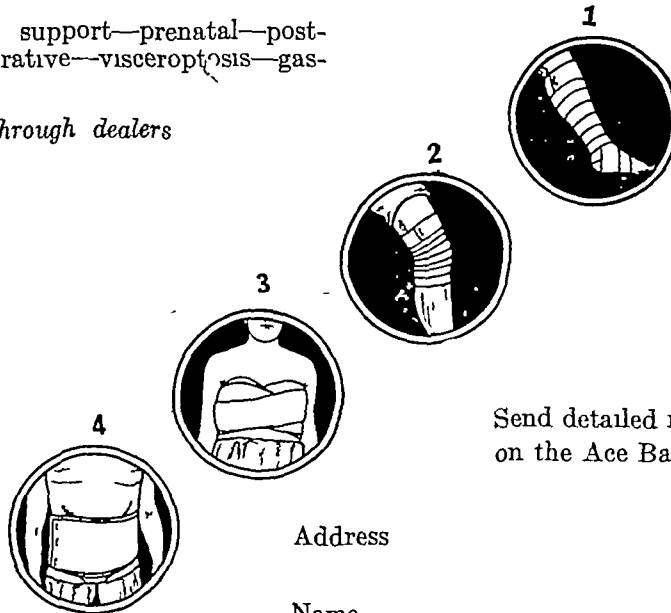


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Vol XIX

AUGUST, 1928

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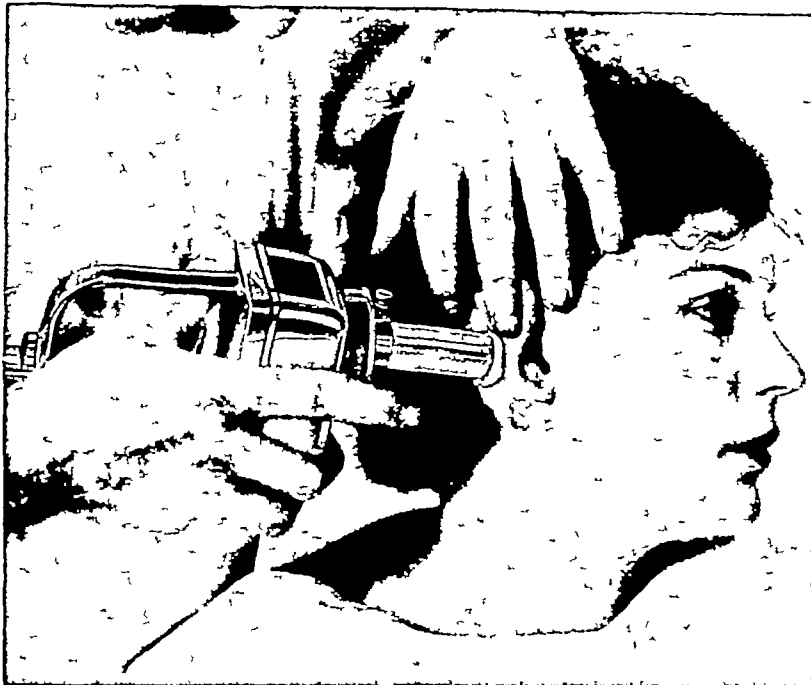
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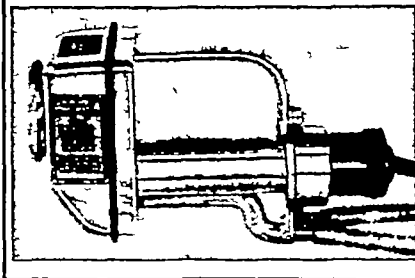
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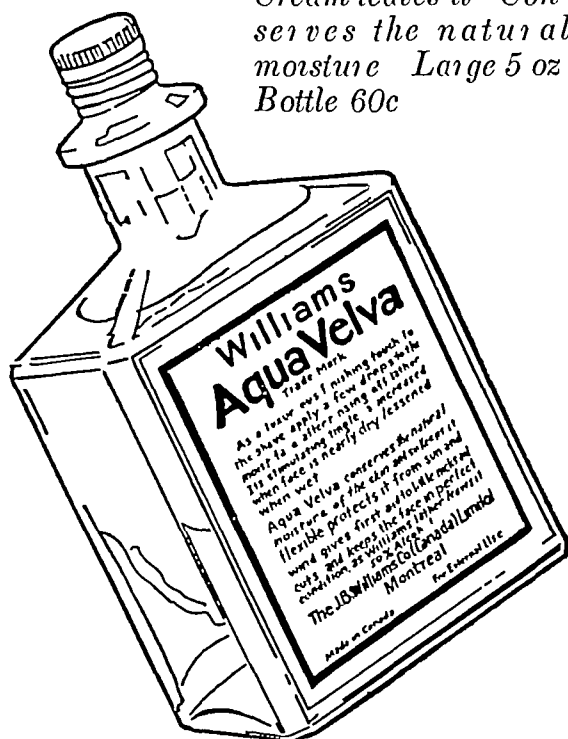
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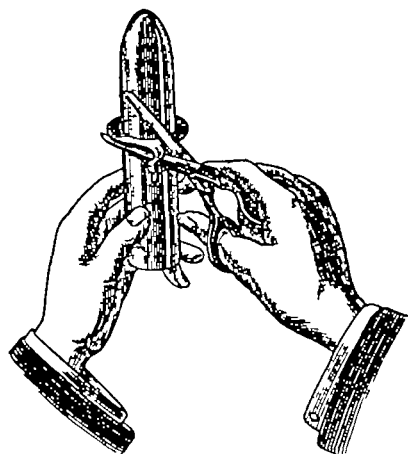
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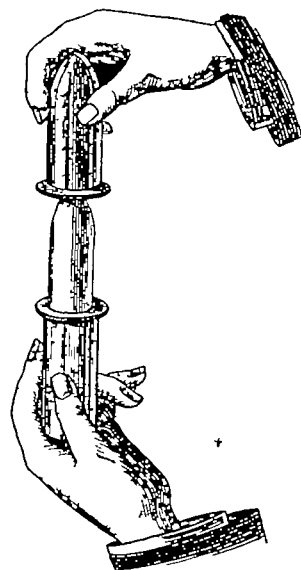
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The Canadian Medical Association Journal

Vol XIX

TORONTO, AUGUST, 1928

No 2

CARCINOMA AND ULCER OF THE STOMACH*

By E M EBERTS, M D

Montreal

BELIEVING this Association to be the proper channel through which to appeal to the profession of Canada, I have had the temerity to ask for a place on the program, in order to urge again the necessity for the earlier recognition of organic lesions of the stomach, especially carcinoma, and to plead for an intensive renewal of our efforts in this direction.

I am aware that this is a well-worn subject, by many it will be thought to be a threadbare subject, but the fact remains that cancer of the stomach is seldom recognized soon enough to render radical operation permanently effective. While it is true that in the early stages cancer of the stomach is often a silent affection, there are undoubtedly many cases in which a comparatively early diagnosis could be made, were it customary to submit every case of gastric disorder to a searching investigation upon the first appeal for treatment. It is the duty of the practitioner to exclude cancer as a cause of the symptoms before prescribing a course of medicinal or dietetic treatment of any duration, yet, in the history of cancer cases it is rarely recorded that, as soon as the complaints were laid before the physician, a test meal was administered and the stomach tube employed, the stools examined for occult blood, or an x-ray examination made. And, in the majority of cases, surgical opinion is sought only after the symptoms are no longer relieved by regulation of the diet and the administration of alkalis or other drugs. In a series of 48 cases of carcinoma of the stomach operated upon by me at the Montreal General

Hospital, gastric symptoms had been present in 30 for a period of more than six months before the true nature of the affection was recognized. Within the past six months there have come under my notice three cases of cancer of the stomach in which the subjective symptoms had for some months been relieved by rest, Sippy diet, and Sippy powders, cases in which a definite diagnosis between cancer and ulcer could not be made upon x-ray examination. These months of palliative treatment represent a loss of very valuable time, time which perhaps ultimately determines whether such patients after operation do or do not make permanent recoveries.

Having in mind the possibility of cancer, one should, in the clinical investigation of gastric cases, inquire especially into

(a) The *duration* of the symptoms complained of and the type of symptoms assembled under the term "indigestion." Pain, it should be noted, is exceptional, the complaint being rather of discomfort after food.

(b) The *appetite*. Anorexia, or at all events a variable or diminished appetite, is suggestive of cancer. In confirmation of what all have from time to time observed, however, Lenoir and Liege¹ have reported an interesting series of cancer cases in which the appetite was not only maintained, but increased.

(c) The *nutrition*. As time passes, cancer patients become aware of loss of strength and loss of weight, signs of failing nutrition.

(d) *Gastric analysis*. In 1879, Van der Velden first taught that the absence of free hydrochloric acid was a diagnostic sign of cancer, and many clinicians still believe that if free hydro-

* Read at the annual meeting of the Canadian Medical Association, Charlottetown, P.E.I., June 20, 1928.

chloric acid is detectable in the stomach contents cancer cannot be present. A résumé of recent publications, however, indicates that free hydrochloric acid is present in about half of the cases of gastric cancer. In my series the percentage was 25. While, therefore, the absence of free hydrochloric acid, in combination with other signs and symptoms, is strongly suggestive of a malignant growth, the presence of free hydrochloric acid by no means precludes the possibility of cancer.

It is now known that achlorhydria is the result of three factors

(1) The destruction of the hormone-bearing mucous membrane of the pyloric canal and pyloric antrum. (In the typical scirrhus carcinoma of the pyloric canal and antrum one would expect the reduction in hydrochloric acid secretion to progress *pari passu* with the destruction of the hormone-bearing mucous membrane. And this is probably what actually occurs.)

(2) The general bodily depression due to cachexia—the toxic factor.

(3) The clogging of the secretory crypts with excessive mucus.

Achylia gastrica is also met with in pernicious anaemia, chronic gastritis, and atrophy of the gastric mucous membrane. Friedenwald and Brown² studied 38 cases of cancer in organs other than the stomach (breast, face, tongue, rectum, intestines, pancreas). The free hydrochloric acid content of the stomach was below normal in 55 per cent and absent in 37 per cent. The secretion of free hydrochloric acid was not augmented or re-established after surgical removal of cancer in a distant organ. Pauchet³ reported 21 cases of cancer of the stomach in which free hydrochloric acid was present. He concluded that the prognosis was much better in these cases than in those with achlorhydria. And this conclusion would accord with the fact that in early lesions free hydrochloric acid is present and that achlorhydria is evidence of extensive pyloric infiltration. On the other hand, Hartman's⁴ studies over a period of five years, on 80 resected cases of carcinoma, led him to believe that those with anacidity showed twice as satisfactory results as those in which free hydrochloric acid was present in the gastric secretion.

Mendel and Engel⁵ have presented evidence to show that the lactic acid in the gastric contents

in cancer cases is due to the action of a substance produced by the cancer itself on the glucose of the food.

(c) *X-ray examination*. This is in many cases of inestimable value, but, as we know from experience, the differentiation between early cancer and peptic ulcer by means of x-ray is not always possible. It is a very human tendency to assume that the lesser evil is the cause of the disorder and to settle comfortably into the conviction that the diagnosis of ulcer has been confirmed when, upon Sippy diet and alkali powders, the patient is relieved of all subjective symptoms.

(f) *Bleeding time*. According to Wiel,⁶ the bleeding time is normal in gastric cancer, but prolonged to seven or eight minutes in ulcer.

(g) *Bacteriology*. The sarcinae and Boas-Oppler bacilli which accompany prolonged stagnation are not found in early cancer cases. Mevringh⁷ has studied the bacteriology of the stomach and duodenum in ulcer and cancer, and has come to the conclusion that there is a rich flora in malignant disease, but a scanty one in benign ulcer. The bacillus coli is quite frequently absent in ulcer cases.

(h) *Sero-diagnosis of cancer*. Botelho, Roffo, and Kahn continue to publish work on the academic aspects of this question, but so far there does not seem to be any reliable test which can be applied clinically.

From the foregoing it is evident that there is as yet no reliable clinical sign or test for early cancer of the stomach. What, then, is the procedure in doubtful cases? I feel very strongly that, in all cases of chronic gastric disorder appearing after the age of forty, irrespective of whether the lesion is thought to be ulcer or cancer, the abdomen should be opened and the stomach directly examined. This can be done with a minimum of hazard, if local anaesthesia is employed for the exploration. Even when the abdomen has been opened and the stomach exposed, there are often occasions when an experienced surgeon is unable to say whether the lesion is benign or malignant. Such an eminent authority as von Haberer⁸ admits that in 5 per cent of ulcer cases he could not be sure on exposure that cancer was absent. Finsterlin⁹ reports that in a series of 145 cases in which resection was performed for supposedly simple ulcer, 21.4 per cent were proved histologically to be cancerous.

It would seem fitting to say something here upon the relation of cancer to chronic peptic ulcer. During the past five years many important papers have been published on this point, but the opinions expressed have been very divergent. There are three main aspects of the subject.

1 Can a gastric cancer be converted into a gastric ulcer? The remarkable case reported by Thalheimer and Wilensky¹⁰ apparently answers this question in the affirmative. They describe a specimen showing a callous ulcer and multiple cancerous metastases, and present very convincing evidence that the ulcer was formerly a cancer and that the malignant tissue had been completely digested away.

2 What percentage of cases of cancer of the stomach originate in peptic ulcer? Those qualified to answer this question do not agree. Estimates vary from zero to 71 per cent. The latter figure is taken from the much discussed contribution of Wilson and McCarthy.¹¹ Expert statistical study of the available data would probably be needed to give an accurate estimate of the percentage. Certainly it cannot be very high, possibly from 5 to 10 per cent.

3 What percentage of ulcer cases become cancerous? (This question would, upon a superficial view, appear to be the same as No. 2. To illustrate the difference it might be proved that all carcinomata originated in ulcer, but this would not prove that all ulcers become cancerous.) McCarthy¹¹ affirms that 68 per cent of the gastric ulcers in his series were associated with cancer, while Ewing¹² says that anything above 3 per cent is a high figure. Finsterlin's⁹ figure is 26.6 per cent, Orator's¹³ 10 per cent in 700 cases. Eusterman¹⁴ maintains that every ulcer is potentially a cancer.

Intensive investigations have been carried out along various lines: (1) animal experimentation, (2) comparison with other cancerous and ulcerative lesions in human cases, (3) statistical studies of human cases, (4) gross anatomical and microscopical studies of human cases, and (5) clinical studies.

ANIMAL EXPERIMENTATION

Hemmeter, Futterer, and Maniscalco¹⁵ have, by irritation of artificially induced ulcers, produced in animals interesting growths described by them as malignant. Ewing,¹⁶ however, points

out that these growths have lacked the progressive character of cancer.

COMPARISON WITH LESIONS IN OTHER ORGANS

Cancer and ulcer may co-exist in the lip, tongue, tonsil, larynx, œsophagus, rectum, or in x-ray dermatitis, but in these lesions the ulceration invariably follows the malignant growth. On the other hand, ulcers may exist for years in the duodenum, where cancer is a curiosity, lupus is complicated by cancer only after an average duration of 30 years, and in varicose ulcers malignant change is met with but rarely, and then as a rule only in the most chronic cases. While this evidence is against the frequent transformation of ulcer into cancer, it must be remembered that the stomach may possibly be an exception.

STATISTICAL STUDIES

R. Williams¹⁶ has made a statistical investigation of the age incidence and location of gastric ulcer and cancer and the occurrence of cancerous degeneration in ulcers elsewhere in the body. His conclusions are against a great frequency of carcinomatous change in peptic ulcer. Bamberger¹⁷ followed for a considerable period 1,025 cases in which gastro-enterostomy had been performed for gastric ulcer. Cancer developed in 22 cases (2.1 per cent). Von Eiselsberg in his own cases observed 5 per cent, Hirschfeld¹⁸ from 5 to 6 per cent. These figures might very well, and undoubtedly do, include cases in which cancer was present at the time of operation, but not recognized. Although it cannot be proved to be true, there would appear to be substantial clinical support for Paterson's contention that, following gastro-enterostomy and the admittance of pancreatic secretion into the stomach, there is conferred upon the stomach the same immunity to cancer as is enjoyed by the small bowel.

PATHOLOGY

Hauser's¹⁹ original description of *ulcus carcinomatosum* has been unsurpassed in modern literature. Of the later descriptions, Ewing¹⁶ conforms to Hauser's. Cancer is seen on the pyloric side of the peptic ulcer. The base of the ulcer is cancerous, since it can be involved on the peritoneal side and shortened.

the serosa and approximation of the lymph nodes by cicatricial contraction, these changes are more marked in the presence of secondary cancer. The lymph-nodes become large and hard. Metastases occur, practically always, in the liver, although many cases die from pyloric obstruction while the lesion is still confined to the stomach and proximal glands. Perforation of a cancerous ulcer may terminate the case.

To Hauser¹⁹ again we owe the best description of the histological features of true "ulcerocancer." The process begins in the edge of the ulcer nearest to the pylorus and consists of a downward growth of atypical glands, which soon break up into irregular alveoli lined by atypical cylindrical or cuboidal cells. The muscle tissue layers of the muscularis mucosa and of the true muscle coat show a definite rearrangement, and the callous ulcer base is free from cancer, unless it is invaded from the peritoneal cavity. (Hemmeter²⁰)

If all pathologists apply these criteria as standards of malignancy occurring in peptic ulcer, there would probably be a closer agreement on the question of the frequency of this lesion.

CLINICAL STUDIES

A résumé of the clinical aspects of a series of gastric cases does little to assist in the perplexing problem of the possible origin of cancer in ulcer. On the contrary, it seems to make the question more difficult, since one is made to realize that a clinical differential diagnosis between an early (i.e., curable) cancer and a chronic peptic ulcer is frequently impossible. We have learned by bitter experience the importance of diagnosis at the earliest possible moment. The realization, too, that in many cases an absolute diagnosis can be arrived at only by histological study, prompts the surgeon to urge early laparotomy in cases of gastric disease. The clinician's duty is not only to name the disease, but also to cure it, and of these two duties the latter is the more important. Perhaps one can illustrate best by analogy the importance of early diagnosis of cancer of the stomach. The efficacy of early operation in cancer of the breast would appear to be beyond question. In this outward and visible form of malignant disease early detection is possible, and, where operation antedates glandular meta-

stasis, the percentage of permanent cures is very high, being at least 75 per cent. On the other hand, in all cases of breast cancer with axillary metastases, from 77 to 80 per cent die of cancer within three years. With the methods at present at our disposal it may be too much to hope that a diagnosis of cancer of the stomach can be frequently made while the disease is in the primary stage, that is while it is still confined to the stomach, but, if a concerted effort on the part of the profession, such as I have suggested at the opening of this paper, should result in the detection of all cancers of the stomach even in the stage of proximal glandular metastasis, radical excision would, I believe, offer as good a prospect of permanent cure as in breast cancer of the same status. This would mean that in from 20 to 23 per cent of cases of carcinoma of the stomach in the early second stage, permanent cures following radical excision might be expected. Even this result, excluding as it does the cases in which lymph-glandular involvement has not yet occurred, would be a tremendous advance upon present results. But is it not possible to eclipse the prognosis which is warranted by the diagnosis of cancer of the stomach in the stage of early glandular involvement? It undoubtedly is, and in time will be realized, but only at such time as the practitioner is prepared to submit promptly to the surgeon for radical treatment all gastric lesions, whether diagnosed as cancer or ulcer. In support of this view one can but refer again to the experience of Finsterer, von Haberer, and others, which proves beyond question that a large percentage of cases can be adjudged cancer or ulcer only by the pathologist. In these cases the cure precedes the diagnosis in fulfilment of the more pressing urgency.

To revert to the present status of diagnosis and the surgical results, I feel very strongly that, in spite of the frequency of recurrence following gastrectomy, all cases of cancer of the stomach, however "inoperable" they may appear to be on physical examination, should be explored, and that, in the absence of infiltration of the pancreas, involvement of the transverse colon, or metastases in the liver, resection should be undertaken. Quite apart from any prospect of permanent cure, radical excision gives to the obstructive case an extension of life prospect of approximately two years, whereas without opera-

tion it would be about six weeks. Furthermore, as is the rare experience in the treatment of advanced cancer of the breast, excision in an apparently hopelessly advanced case may give an even longer respite. In illustration of this occasional brand that is saved from the burning I would cite briefly the following case.

C. L. W., male, aged 49, a resident of Granada, B. W. I., was admitted to the Montreal General Hospital (service of Dr. H. A. Lafleur) on December 11, 1923. The patient presented the usual symptoms of pyloric obstruction, namely, discomfort after food, coffee ground vomitus, loss of weight, and loss of strength, symptoms which had been present for three months. On examination of the abdomen there could be seen and felt a large tumour in the pyloric region. The x-ray confirmed the diagnosis of extensive pyloric cancer with 48 hour retention. Under ether anaesthesia subtotal gastrectomy, with removal of the subpyloric lymph nodes as well as the lymph nodes in the gastrohepatic omentum (the latter containing metastases), was performed, concluding with a retrocolic anastomosis between the gastric stump and the jejunum (Polya). Recovery was uneventful. After a lapse of four and a half years the patient is in normal health and throughout this period has been able to carry on without interruption his duties as a government official.

Finally, as an additional plea for radical excision even in advanced cases, subject of course to those restrictions already mentioned, one should point out that recurrence is almost invariably in the liver and runs a rapid and usually painless course. Recurrence in the stomach itself is unusual, and the patient is spared the distress of persistent vomiting and a death from starvation.

Time will not permit of a discussion of the technical procedure of gastrectomy. The risks are those of intestinal resection generally and post-operative deaths are due to pneumonia, not to peritonitis. Under local infiltration of the abdominal wall for the incision and of the root of transverse mesocolon and gastro-hepatic omentum along the lesser curvature at the junction of the fundus with the oesophagus, or by the use of splanchnic anaesthesia after the abdomen has been opened, resection can be carried out without discomfort to the patient. This

method of anaesthesia permits the inclusion in the operable class of a large number of patients who, because of the cachexia and extreme anaemia, could not be given a general anaesthetic without too great hazard.

Attention was then drawn to an exhibit of a series of casts of stomach lesions, both cancer and ulcer. These beautiful preparations were the work of Miss Hortense Douglas, artist to the Montreal General Hospital. They were prepared with infinite care and fidelity and undoubtedly were a great advance upon the actual specimens fixed and preserved by chemical agents.

Acknowledgement was made to Drs. Bazin, Barlow, and Howard for the loan of specimens from their services.

The specimen of benign and malignant papilloma was rather unique. This was a case where the early symptom (haemorrhage) was erroneously attributed to high blood pressure. Had the case been investigated radiographically three years ago and operation performed, there was no doubt that the diffuse papillomatosis would have been found to be wholly benign. (X-ray diagnosis of both benign and malignant papillomata was made by Dr. Ritchie, radiologist to the Montreal General Hospital.)

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"Whoever is to acquire a competent knowledge of Medicine ought to be possessed of the following advantages: a natural disposition, instruction, a favourable position for the study, early tuition, love of labour, leisure. First of all, a natural talent is required, for when nature opposes everything else is vain, but when nature leads the way to what is most

excellent, instruction in the art takes place, which the student must try to appropriate to himself by reflection, becoming an early pupil in a place well adapted for instruction. He must also bring to the task a love of labour and perseverance, so that the instruction taking root may bring forth proper and abundant fruits."—*Hippocrates*

THE TREATMENT OF PERNICIOUS ANÆMIA*

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TWO years ago, on a similar occasion, I had the honour of addressing the members of this Association on the subject of Addison's "pernicious" anæmia.¹ In discussing the treatment of this disease at that time I stated that Minot² had recently reported favourable results from the feeding of liver. Since then the results obtained by Minot and Murphy have been fully confirmed by a number of clinicians, both on this continent and abroad.

Successful as the feeding of liver is in the treatment of pernicious anæmia it does not follow that other important features of our former regime of treatment can be disregarded and their value lost sight of. Adequate rest in bed, with controlled rest and exercise to avoid fatigue, attention to possible foci of infection, and the administration of hydrochloric acid are just as important to-day as before the days of liver feeding. Early diagnosis, the removal of foci of infection, and adequate rest in the early stages of treatment of pernicious anæmia are the three principal requirements if the best results are to be obtained from the feeding of liver.

Why are these important? In addition to the signs and symptoms of anæmia present, the result of disease of the hæmatopoietic system, signs and symptoms are found characteristic of disease of other systems of the body, more particularly of the digestive and nervous systems, *e g*, periodic sore tongue, and persistent numbness and tingling of the extremities, indicating that the disease is not confined to the blood-forming organs. As these latter symptoms often appear before significant signs of anæmia develop, and constitute the chief complaint of some patients, failure to recognize them as possible manifestations of pernicious anæmia leads to a false diagnosis and the treatment of the case for some indefinite condition affecting the digestive or nervous systems. As a result, the associated changes in the nervous system are allowed to advance to a stage where complete recovery of

function is impossible, despite the cure of the anæmia, or complete anorexia develops, often associated with other distressing gastrointestinal symptoms, which makes the institution of liver feeding very difficult.

The removal of foci of infection is important for several reasons. (1) Focal infection is known to affect the bone marrow and cause an anæmia of the secondary type. The presence of a focal infection in patients suffering from pernicious anæmia is not only an additional cause for the production of anæmia but, more important, liver therapy is of little value in the treatment of anæmia due to focal infection. The response of pernicious anæmia patients to liver feeding is less satisfactory in the presence of a focal infection, (2) Foci of infection may affect all systems of the body, and structures like the spinal cord, the tongue, and possibly other organs already affected by the existing pernicious anæmia, are more susceptible than healthy tissues to the toxic effects of a focal infection, and the improvement in symptoms caused by these changes following liver treatment is naturally slower and often incomplete. Experience in the treatment of pernicious anæmia cases has shown that symptoms apparently relieved during treatment may reappear with the development of an intercurrent infection. There can be no doubt, therefore, as to the importance of the eradication of all foci of infection at a favourable time during the course of treatment.

Lastly, the importance of rest.—In patients suffering from any form of anæmia, fatigue both mental and physical is often one of the major complaints. Rest is the best form of treatment for fatigue from any cause, and the prevention of fatigue by absolute rest, followed by controlled rest and exercise periods later, is considered essential for the successful treatment of disturbances of function due to lesions of the nervous system, such as are so commonly found in pernicious anæmia. In this disease rest is necessary in treatment, firstly, until the anæmia is improved to a degree where exercise may be taken without fatigue, and secondly, until an adequate time has been given for sufficient im-

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provement to take place in the lesions affecting the nervous system to allow of a moderate degree of activity, both physical and mental, without the development of fatigue

GENERAL PLAN OF TREATMENT

All patients suffering from pernicious anæmia should have absolute rest in bed and freedom from all responsibilities at the beginning of treatment. If gastrointestinal symptoms are not marked, and the patient is able to eat, he should be given a balanced diet containing milk, green vegetables, fresh fruit, and red meats, including, 150 to 240 grams (5-8 ounces) of liver daily.³ After a few days the appetite improves and the patient feels better. The slight fever, the sore tongue, and the bilirubinæmia present soon disappear. At the end of two weeks the percentage of hæmoglobin begins to rise, and a corresponding increase in the number of red blood corpuscles occurs. In our series of cases the increase in the hæmoglobin during the first month averaged 27.5 per cent, the highest being 64 and the lowest 10 per cent. In the second month, the increase averaged 20 per cent and at the end of three months of treatment the hæmoglobin was usually above 80 per cent and the red blood corpuscles more than 4,000,000. This improvement has been maintained without remissions for periods up to two years in patients following the treatment prescribed. All these patients received 150 grams of cooked liver daily. In a large series of cases reported by Minot and Murphy⁴ the average number of red blood corpuscles at the beginning of treatment was 1,483,000, at the end of two months 4,200,000, and in the cases which had adhered to diet, observed at the end of two years, the red blood corpuscles were more than 4,500,000. This group of patients received approximately 200 grams of liver daily. Although improvement in the anæmia during the first two months in their series of cases was a little more rapid than in ours, given 150 grams of liver daily, the latter quantity in our experience has been found sufficient to maintain the number of red blood corpuscles and the percentage of hæmoglobin at or about a normal level.

Liver may be served raw or cooked. It may be ordered as liver and bacon, or it may be ground to a pulp and the daily quantity given raw in fruit juice, or lightly cooked as liver soup, liver hash, croquettes or patties. If the preparation is varied from day to day little difficulty is experi-

enced in persuading the patient to take the prescribed amount. In patients with severe gastrointestinal symptoms, such as complete anorexia, nausea and vomiting, some difficulty may be found during the first few days of treatment. If one is persistent and succeeds in getting them to take liver in some form for three or four days, the serious gastrointestinal symptoms disappear, the appetite returns and, as Minot and Murphy have reported, they may become ravenously hungry. At the end of a week they are usually able to take a fairly liberal diet. The preparation of a suitable liver extract has greatly simplified the treatment of this type of case, as a dose of the extract, given in some fresh fruit juice, is usually retained. If no liver extract is available, liver soup or liver juice expressed from slightly cooked, ground liver may be given with the juice of an orange or grape fruit. It may be necessary to feed the patient through a duodenal tube for the first couple of days. In the past a few of these patients were tided over by transfusion, many, if not the majority, died.

In most cases at rest in bed distressing symptoms disappear in a week or two, and at the end of a month even peripheral nervous manifestations, such as numbness and tingling, especially if they have been of short duration, have disappeared. The patient feels well and wants to be up and about. In allowing him up, the avoidance of fatigue should be our chief concern in treatment. Patients with no symptoms referable to the nervous system may be allowed up after two weeks if the hæmoglobin is over sixty per cent. The amount of exercise should be increased daily, always within the point of causing fatigue, until the patient is able to resume work. Recovery from nervous manifestations appears to be dependent not only upon their severity but upon their duration, and improvement takes place slowly as compared with other symptoms. With liver treatment the improvement in the general condition of the patient, and the cure of the anæmia, are so rapid, in comparison with the usual results obtained from former methods of treatment, that patients are now allowed to become active, both physically and mentally, too early in treatment. Patients should have absolute rest for one month after the nervous symptoms have been relieved or become stationary, then rest and exercise should be controlled according to the severity and character of the symptoms. Once numbness and tingling have been relieved, fatigue from over-

activity, the development of an infection, or the interruption of liver treatment, have been in our experience the three factors responsible for their recurrence. In patients complaining of difficulty in walking, due to lesions in the posterior and lateral columns of the cord, almost complete recovery may take place, and the patient be able to walk without difficulty if the complaint has been of short duration. In long standing cases marked improvement may occur, but a definite disability remain. Hence the importance of the early recognition of the nervous manifestations of pernicious anæmia. A history of numbness and tingling, or the development of signs suggestive of *tabes dorsalis*, should be an indication for the most careful examination of the blood, to exclude or prove the presence of pernicious anæmia.

When a patient is taking the required amount of liver daily and not responding to treatment a focus of infection should be suspected. In the presence of an infection the response of the bone marrow to liver feeding is poor, the relief of symptoms is delayed, and in patients relieved of symptoms the development of an intercurrent infection, *e.g.*, tonsillitis, often causes a return of symptoms, such as numbness and tingling. Every case should be carefully investigated for possible foci of infection, particularly in the upper respiratory tract, and in the case of male patients in the prostate. If an acute or subacute infection is present local treatment should be given until the infection subsides and the general condition of the patient has improved, before suggesting removal by operation. If multiple foci of infection are present they should be removed gradually, otherwise severe reactions with exacerbations of symptoms may follow. Too often patients with several infected teeth are advised to have them extracted, and unless the dentist is warned he may remove them all at one sitting. The physician should supervise extractions, advising the removal of one in the beginning, and further extractions according to the reaction that takes place. Possible metastatic foci of infection in the gall bladder, appendix, etc., should not be forgotten. In patients adhering to treatment, but not improving, in whom no foci of infection have been found, continue the search for an infected focus.

In pernicious anæmia achlorhydria (not the result of the disease but probably a factor in its development) is always present. An attempt should be made to compensate for the deficiency

of hydrochloric acid in the stomach by the liberal administration of this acid, as recommended by Hurst. Treatment should begin with one drachm of dilute hydrochloric acid in a tumblerful of fruit juice sweetened with sugar, the patient being instructed to take one-third half an hour before each meal, one-third during the meal and one-third one-half hour after each meal. This dose should be increased until he is taking one and one-half to two drachms three times a day. He should be advised to drink the acid fruit juice mixture through a straw or, if taken in the ordinary manner, to wash the mouth with water. While it is true that the anæmia and the associated symptoms will improve without the administration of acid, it seems advisable to compensate for the acid deficiency by prescribing it in the dose recommended. Patients once accustomed to taking acid usually refuse to give it up.

Blood transfusions are seldom indicated. With the number of red blood corpuscles below a million, and nausea and vomiting present, a single transfusion of blood is often followed by an improvement in the general condition of the patient, which may tide him over until he is able to take an adequate quantity of liver.

A liver extract is now available as a substitute for whole liver. The active principle which is effective in the treatment of pernicious anæmia has been found by Cohn,⁵ an associate of Minot, to be present in a non-protein fraction of the liver. It is soluble in water, insoluble in ether, precipitated by alcohol, is free from lecithin and ordinary lipoids, and contains 7 per cent of nitrogen and only a trace of iron and sulphur. This extract, when prescribed with the diet recommended above, but without the addition of liver, has the same effect on the blood forming organs in pernicious anæmia as whole liver. In beginning treatment, Minot and his associates⁶ recommend a dose of extract equivalent to the amount derived from 500 to 600 grams of liver. Later, this may be decreased to the amount derived from 300 to 400 grams. We have found that this latter dose produces the same rate of improvement in the blood as 150 grams of whole liver. At the present time liver extracts prepared by a number of pharmaceutical firms are on the market. These extracts are not all of equal potency. Unless the physician is able to have the patient's blood examined daily during the first two weeks of treatment, to determine the reticulocyte response, and thereby test the

potency of the extract, he will be well advised to begin treatment with whole liver, or to prescribe only a liver extract from a batch known to be potent. This is particularly important in patients with marked gastrointestinal symptoms and a severe degree of anæmia.

A word with reference to the value of liver in other types of anæmia. The public, generally, know of the striking results obtained in the treatment of pernicious anæmia from the feeding of liver. To-day many people are taking liver because they are pale, and many physicians are prescribing liver in all types of anæmia. The feeding of liver has a specific effect on the bone marrow in pernicious anæmia,⁴ producing a temporary but prompt marked increase in the reticulocytes, followed by a rapid rise in the number of red blood corpuscles toward a normal level, which is maintained as long as the patient continues to take an adequate quantity of liver. No such reticulocyte response or rise in the number of red blood corpuscles occurs in the common secondary types of anæmia. No results are obtained in the treatment of secondary types of anæmia which justify the feeding of large quantities of liver.

Patients undergoing treatment for pernicious anæmia should return periodically for an examination of the blood. They should be questioned as to the amount of liver they are taking each day. Careful enquiry should be made as to the return of symptoms previously relieved by treatment, especially with reference to the early digestive and nervous manifestations of the disease. In one of our patients a sore tongue recurred when the red blood corpuscles were about normal in number. It was later found that this patient for economic reasons was taking

liver irregularly. Just as periodic sore tongue may occur in the beginning of the disease before a definite anæmia has developed, so it may antedate the development of anæmia in a relapse, and be the first indication that the patient is not receiving an adequate quantity of liver. Three factors appear to be chiefly responsible for the reappearance of anæmia, or the return of symptoms previously relieved by treatment, or the exacerbation of nervous manifestations that had become stationary. They are (1) an inadequate daily amount of liver, (2) infections, (3) activity beyond the physical or mental reserve of the patient. Hence the importance of periodic examinations to check the development of even mild relapses.

If the plan of treatment just outlined is followed, and the patient co-operates in the treatment, we are justified in concluding that the anæmia present in pernicious anæmia will be cured, that signs and symptoms not the result of structural changes in a stage beyond repair will disappear, and that the disease will remain under control so long as the patient takes the required daily amount of liver or suitable liver extract. The successful treatment of another disease has been accomplished.

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"When we turn to chronic rheumatism the first thing that strikes the eye is the complexity of the picture. In this picture, however, certain features are found which resemble those of acute rheumatism: the disordered skin reaction, the disturbance of endocrine function, and the specific tissue reaction to low grade streptococci, namely, the nodule. Like acute rheumatism, these conditions—whether infective arthritis, fibrositis, or osteo-arthritis—must be looked upon as biological deviations, as system diseases. The first two have their seeds in early life, while the last may be a part of the general deterioration of advancing years affecting joints which have been weakened by strain, trauma, or infection, acting separately or together. In

the investigation of these diseases it is necessary to pay attention to the biochemical constitution of the patient, and deviations from the normal will often, if not always, be met with. The commonest are disturbances in sugar tolerance, alterations in the pH values of the body fluids, and abnormalities in the metabolism of calcium, phosphorus, and sulphur. The endocrine organs, and more particularly the thyroid gland, are as a rule at fault, hypothyroidism being associated particularly with fibrositis and chronic synovitis, and dysthyroidism with infective arthritis. Foci of infection are of great, but not exclusive, importance, and faulty elimination must also be taken into account."—*Brit M J*, 1928, i, 860

THE STUDY OF THE EFFECT OF VARIOUS AGENTS, CHIEFLY SUNLIGHT UPON THE SUSCEPTIBILITY OF RACHITIC RATS TO INFECTION

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THIS communication is a complete summary* of results obtained in a study of the effect of sunshine on rachitic rats, as measured by their susceptibility to infection. As the shorter ultraviolet rays in the sunshine improve the rickets in these animals, a brief comparative study, using the same test of susceptibility, of the effect of other antirachitic agents, *e g*, the mercury-vapour lamp (so-called artificial sunlight), cod liver oil, and irradiated ergosterol was undertaken. Similar experiments were carried out to determine if possible whether exposure to cold air was a factor in raising the resistance of these animals.

THE RATS†

Albino rats, twenty-five to twenty-seven days old, were used as the test animals. The diet and environment of the breeding rats were kept constant, in order to reduce to the minimum the variation in the amounts of vitamin D stored up during lactation. All the rats, except a few in the last experiments which were given a normal diet, were put on McCollum's rachitogenic diet 3143, as soon as they were received, and were kept on this diet for four weeks. At the end of this time their resistance to infection was determined.

THE INFECTING ORGANISM

A strain of *B. coli communis*, which had been obtained in a nasal culture from a normal rat, was used as the infecting organism. Eighteen hours' growths on plain agar slants were washed off with measured amounts of saline, and a small quantity of this suspension was injected into the peritoneal cavity. In the first ten experi-

ments (Table I and about 1/5 of those in Table IIa), all the rats in each experiment received the same amount of suspension. In all the later tests, each animal was given a dose proportional to its weight (0.003 c.c. per gram body weight). For example, a rat weighing 76 gm. would be given 0.23 c.c. of the suspension.

As the sun-exposed rats frequently weighed on the average a little more than the rats kept inside, they received larger doses, which made the test more severe.

From the results of a number of supplementary experiments, we believe that the rats, following the injection, die from a generalized infection. Post-mortem examinations, including blood cultures, were made on all the dead rats. When a capillary pipette was used to obtain the blood from the heart, practically 100 per cent of the dead rats showed pure cultures of Gram-negative bacilli. The biological and serological reactions of three recovered strains were studied and they were identical with those of the injected organism.

The results of the first 6 experiments,‡ which have previously been described in detail, are summarized in Table I. Twice as many sun-treated as inside rats survived the infection.

Table II (A) is a summary of the results obtained in 18 experiments in which was com-

TABLE I
Inside Rachitic

Exposed to Sunshine for 4 Weeks	Total Number	Number Dead	Per Cent Alive	Average Weight (Grams)
February to June	36	24	33%	59

Sun treated Rachitic

Exposed to Sunshine for 4 Weeks	Total Number	Number Dead	Per Cent Alive	Average Weight (Grams)
February to June	36	11	67%	66

* A preliminary report of the first series of experiments was published in this *Journal*, September, 1927, vii, 1033. A detailed report including a review of the literature will be published later.

† A number of these rats were from among those provided for studies on the antirachitic effect of sunshine, by the funds of a grant from the Department of Health of the Province of Ontario.

‡ The author is much indebted to Dr. A. Brown and Dr. F. F. Tisdall, who supervised the feeding and irradiation of the animals.

TABLE II (A)
1 Inside Rachitic

Exposed to Sunshine for 4 Weeks	Total Number	Number Dead	Per Cent Alive	Average Weight (Grams)
October to February— May and June	103	77	25%	55

2 Mercury Lamp Rachitic

Exposed to Sunshine for 4 Weeks	Total Number	Number Dead	Per Cent Alive	Average Weight (Grams)
October to February— May and June	101	63	38%	51

3 Sun treated Rachitic

Exposed to Sunshine for 4 Weeks	Total Number	Number Dead	Per Cent Alive	Average Weight (Grams)
October to February— May and June	105	59	44%	58

TABLE II (B)

Details of Experiment No 22

Rats injected January 10 (exposed to sun in December and January) Suspension made by adding 45 c.c. saline to moderately long 18 hours growth on plain agar slant Each rat given 0.003 c.c. of this suspension per gram weight.

1 Inside Rachitic

Total Number	Number Dead	Weight (grams)	Dose c.c.	Per Cent Alive
7	7	75 (d)	22	0%
		67 (d)	20	
		65 (d)	195	
		60 (d)	18	
		54 (d)	16	
		52 (d)	16	
		52 (d)	16	

These rats died 5 6 16 16 16 16 and 40 hours after injection

2 Mercury Lamp Rachitic

Total Number	Number Dead	Weight (grams)	Dose c.c.	Per Cent Alive
8	7	74 (d)	22	12.5%
		72 (d)	22	
		64	19	
		62 (d)	19	
		60 (d)	18	
		56 (d)	17	
		52 (d)	16	
		51 (d)	15	

These rats died 5 5 7 7 7 16 and 16 hours after injection

3 Sun treated Rachitic

Total Number	Number Dead	Weight (grams)	Dose c.c.	Per Cent Alive
7	4	71	21	43%
		68	20	
		65	195	
		62 (d)	19	
		58 (d)	17	
		54 (d)	16	
		52 (d)	16	

These rats died 5 5 7 and 29 hours after injection

d = dead

pared the susceptibility of rachitic rats (1) exposed to the sunshine for the routine 2 hours per day (11 a.m. - 1 p.m.) for 4 weeks, (2) exposed for 15 minutes per day, 30 cm from a quartz mercury-vapour lamp for 4 weeks, and (3) kept inside in an animal room in which the windows were opaque, and the door provided with a screen, so that no direct sunlight reached the cages

Table II (B) gives the details of one of the eighteen experiments which are summarized in Table II (A)

Of 105 sun-treated rats, 44 per cent survived as compared with 25 per cent of the 103 inside rats. In two individual experiments, a greater percentage of inside than sun-exposed rats survived, but in the other sixteen experiments, the sun-exposed showed the higher survival rate. As 38 per cent of the 101 mercury-lamp rats survived, it is evident that they did not withstand the infection as well as the sun-exposed rats. In 4 of the 18 experiments the mercury-lamp rats showed the highest survival rate. These rats exposed to the mercury-vapour lamp have less marked rickets than the rats exposed to the winter sunshine, and if the increased resistance is due to the healing of the rickets, one would expect the mercury-lamp rats to do the best, unless in addition to its rickets healing power the mercury-lamp has an injurious effect on the rats. It is suspected that the fifteen minute exposures were too long, for when two small groups of rats were irradiated for 7½ instead of 15 minutes they showed a degree of resistance equal to that of the rats put out in the sun. From a study of the literature, also, it seems probable that short exposures of 5 to 10 minutes per week are more beneficial, at least to normal human beings, than more frequent and longer exposures.

The rats that were put out in the sun were also exposed to the cooler outside air and any benefit which they obtained from the latter environment might explain the higher resistance rate of the sun-exposed as compared with the mercury-lamp-exposed rats. To determine if exposure to the air affected their susceptibility, rats kept inside, rats put out in the open air but protected by a rough shelter from the sun, and rats put out in the open air and sun were compared. Table III gives the results of this series of 10 experiments. It is evident that the sun-

TABLE III
1 Inside Rachitic

Exposed to Sunshine for 4 Weeks	Total Number	Number Dead	Per Cent Alive	Average Weight (Grams)
January to May	65	33	49%	63

2 Outside Rachitic—No Sun

Exposed to Sunshine for 4 Weeks	Total Number	Number Dead	Per Cent Alive	Average Weight (Grams)
January to May	70	39	44%	60

3 Sun treated Rachitic

Exposed to Sunshine for 4 Weeks	Total Number	Number Dead	Per Cent Alive	Average Weight (Grams)
January to May	72	26	64%	65

exposed rats survived in greater numbers than those kept inside. The survival rates of the rats exposed to the sun alone varied greatly in the different experiments. In three experiments they withstood the infection better than the inside rats and not as well as the sun exposed, but for the rest, they died more frequently than either of the other two types. The variations did not correspond with changes in the temperature of the outside air. When the results from all the experiments were added up, it was seen that the rats exposed to the sun alone did not show as high a survival rate as the rats kept inside. Consequently, it was concluded that the rats under the conditions of this experiment were not benefited by the outside air.

So far, most of the results had suggested that the increase in resistance ran parallel with the healing of the rickets. Whether a similar beneficial effect would follow the curing of the rickets by the addition to the food of small amounts of cod liver oil or irradiated ergosterol (which is vitamin D) was studied in the next group of rats. These experiments were not as satisfactory as the preceding ones, partly because for some reason the rats kept inside did not show marked rickets (some of the antirachitic food might have dropped through from the cages above), and partly because the results with the rats fed the antirachitic substances varied greatly in the different experiments. If the variations were overlooked and the total results of all experiments added up, it was seen that the curing of the rickets, whether by sun-

shine or irradiated ergosterol, raised the resistance equally well. Cod liver oil was less effective. These results are shown in Table IV.

TABLE IV
1 Inside Rachitic

Exposed to Sunshine for 4 Weeks	Total Number	Number Dead	Per Cent Alive	Average Weight (Grams)
April to June	37	19	49%	65

2 Inside Rachitic plus Irradiated Ergosterol

Exposed to Sunshine for 4 Weeks	Total Number	Number Dead	Per Cent Alive	Average Weight (Grams)
April to June	18	7	61%	64

3 Inside Rachitic plus Cod Liver Oil 2%

Exposed to Sunshine for 4 Weeks	Total Number	Number Dead	Per Cent Alive	Average Weight (Grams)
April to June	33	18	46%	71

4 Sun-treated Rachitic

Exposed to Sunshine for 4 Weeks	Total Number	Number Dead	Per Cent Alive	Average Weight (Grams)
April to June	50	19	62%	68

Similar experiments should be repeated and additional ones, embodying some improved technique for the administration of the antirachitic material undertaken.

When rats fed a normal diet were placed out in the sun for the some two hours daily, they did not gain in weight as well as did similar rats given the same food but kept inside. At the end of the four weeks' treatment, these sun-exposed rats did not withstand the artificial infection as well as those kept inside. Apparently, therefore, exposure to the sun is not beneficial to normal rats. (See Table V)

TABLE V
1 Inside Normal

Exposed to Sunshine for 4 Weeks	Total Number	Number Dead	Per Cent Alive	Average Weight (Grams)
May and June	27	11	59%	85

2. Sun-Treated Normal

Exposed to Sunshine for 4 weeks	Total Number	Number Dead	Per Cent Alive	Average Weight (Grams)
May and June	25	14	44%	80

CONCLUSION

It has been found that exposure to the sun about noon for 2 hours daily during a period of 4 weeks markedly raises the resistance of young rachitic rats to infection. Of 263 sun-exposed rats, 57 per cent survived, and of 241 rats kept inside, 32 per cent survived. Normal rats, after such sun treatment, did not survive as well as similar rats kept inside. Exposure to the outside air with protection from the sun had no beneficial effect on rachitic rats. After these

rachitic rats had been given treatments extending over 4 weeks' time, in which they were exposed at a distance of 30 inches from a quartz mercury-vapour lamp for fifteen minutes daily, they showed a higher degree of resistance than corresponding rats kept inside, but not as high as such rats put out in the sun. Fifteen minutes is probably too long an exposure for these animals. Rachitic rats, fed small amounts of irradiated ergosterol, are less susceptible to artificial infection than such rats that have been given no antirachitic treatment.

CHRONIC CARBON MONOXIDE POISONING*

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CARBON monoxide poisoning is one of our most serious health problems. It is widespread and difficult to cope with, and comparatively little has been accomplished so far in its prevention. Since the discovery of fire, it has been a menace to man, and, as time has passed, it has become of more and more importance, until to-day it is involved in his very existence. Aristotle¹ referred to coal gas as a cause of death, and Livy described wholesale executions by suffocation from the gases of fires. Its path through the middle ages has been traced. By 1500 A D the symptoms of poisoning were known, and its importance as an industrial poison was recognized, and in the eighteenth century accurate observations of its effects were published. These effects had often been attributed to the work of demons and witches. It was first artificially prepared by Lassone in 1776, and for a time was thought to be identical with hydrogen. Much has been done to combat the more familiar form of acute poisoning, though deaths are on the increase². It is with the problem of chronic poisoning that this paper deals.

NATURE OF THE GAS AND ITS DISTRIBUTION

Carbon monoxide is a colourless, odourless, tasteless gas, non-irritating, and chemically

inert, which is formed when incomplete combustion of organic matter takes place. Since combustion of fuels is far from complete, it follows that it is produced in large quantities and is widely distributed. It is present in the exhaust of all types of gasoline engines, it is formed when wood or coal is burned, it is found about blast furnaces, gas works, smelters, and in mines, it is produced in the firing of guns and in the explosion of military mines, it is even present in tobacco smoke. There are few industrial activities in which carbon monoxide is not encountered. The effects of chronic poisoning are insidious and slow in appearing, and depend upon exposure to low concentrations of the gas, extending over weeks or months. Damage may be done before the patient realizes he is in danger.

Carbon monoxide from automobiles on streets where the traffic is heavy is a menace to people in general. When one remembers that there is a motor car for every eleven people in Canada and for every five in the United States, with the number rapidly increasing, to say nothing of the many stationary gasoline engines in use, the extent of pollution of the air becomes apparent. Exhaust gas from the ordinary automobile contains 5 to 6 per cent of carbon monoxide. In the average private garage with the doors closed, and in which an automobile engine is running, a dangerous concentration of

* Read at the annual meeting of the Ontario Medical Association, Kingston, May 31, 1928.

gas is reached in three minutes, and asphyxiation may occur in five, followed by rapid death^{3,4}. The effect is much slower on the streets and in large public garages, where the concentration, although much less, may still reach a degree incompatible with health. In 1923, Henderson and Haggard,⁵ investigating the conditions in city streets, found that a stationary car with the motor running filled the air behind it at respiratory level with four to six parts of carbon monoxide per 10,000 of air. When running ten miles per hour, the occupants of a car thirty feet behind were surrounded by exhaust gas diluted to a concentration of one to two parts of carbon monoxide. One part in 10,000 was a frequent condition in streets where traffic was heavy, and in unusually congested areas a higher amount was present. They also emphasized the point, worth noting in passing, that whereas gasoline itself gave an exhaust the only poisonous constituent of which was carbon monoxide, some motor fuels containing a high content of benzene and other related substances, produced toxic gases which were among the most harmful of vapours, causing a progressive and cumulative effect. They drew attention to the fact that the exhaust from motors was far more toxic than smoke from dwelling or factory chimneys. It seems safe to say, when one considers the increase in the use of automobiles and especially of large trucks and buses which everywhere belch out large amounts of exhaust gas, that the atmospheric content of carbon monoxide in city streets is greater to-day than in 1923. Wilson, Gates, Owen and Dawson⁶ examined the blood of traffic policemen after an ordinary day's work and found that it contained in some instances as high as 30 per cent saturation with carbon monoxide, at which point mild subjective symptoms became apparent. Shumway⁷ reported several cases of illness resulting from more or less constant exposure to exhaust gas under the usual conditions of city life. Safe air in public garages having no artificial means of ventilation was examined by Ciampolini⁸ who found that it contained as high as 0.2 per cent of carbon monoxide. Many workmen showed 10 to 20 per cent saturation of their blood and suffered from signs and symptoms of chronic poisoning, as pallor, nervous and gastric manifestations, and insomnia. Apfelbach⁹ described conditions about blast furnaces, in the illuminating-gas industry, power gas industry,

in the use of ovens, and among firemen and boiler operators. Conditions relative to automobile exhaust have been completely reviewed in a report¹⁰ to the New York Academy of Medicine. Hayhurst¹¹ dealt with poisoning from gas stoves, especially those without flues, and Haldane¹² advised that not more than 20 per cent carbon monoxide be allowed in city gas in order to keep air pollution through small leaks below a dangerous level. The proportion of carbon monoxide¹³ in industrial and domestic gases varies between 4 and 30 per cent, coal gas, 4 to 10 per cent, water gas, 30 per cent, producer gas, 20 to 30 per cent. Sundell¹⁴ stated that more casualties occurred in the few days subsequent to the explosion of military mines than at the time of the explosion, as crevices formed in the earth became filled with gas which gradually seeped into adjacent workings. Rutherford¹⁵ reported a mine explosion in 1916 after which gas issuing from the ground burned with a flame visible at a mile for five hours after the mine had gone up. Armstrong¹⁶ analyzed undiluted smoke from cigars and cigarettes and found that it contained as much as 8 per cent and 1 per cent carbon monoxide respectively. Habitual smokers have shown a blood saturation as high as 6 per cent. In an investigation of the hazards from tobacco smoke, Jones, Yant, and Berger¹⁷ found that after forty to sixty minutes smoking in a closed room of 1,000 cubic feet capacity, the carbon monoxide present was never greater than 0.2 per cent. The smoke was four to six times more concentrated than would be permitted under well ventilated conditions, so that the carbon monoxide would be no higher than on streets with heavy automobile traffic.

The importance of carbon monoxide in modern life is well illustrated by the ventilation problem in the Holland Tubes for automobile traffic under the Hudson river at New York. Were a direct draft used to clear them of gas and render passage safe for the occupants of cars, a current of fresh air having a velocity of 72 miles per hour would be required.

SIGNS, SYMPTOMS AND RESULTS OF CHRONIC POISONING

Many accounts of chronic carbon monoxide poisoning have been written, and those of McGurn^{18, 19} are especially interesting. He described fourteen cases showing the pictures of toxic nerve irritations, combined cerebro-spinal

and peripheral nerve lesions, peripheral neuritis, permanent muscular weakness, cerebro spinal irritations, chronic invalidism, petit mal, high blood pressure and vaso-motor disturbances, convulsions and cateleptoid stupor, insanity, glycosuria and pseudo tabes, and multiple sclerosis. These cases were selected from among intelligent individuals, whose histories and co-operation could be relied upon, whom he was able to study intensively and follow carefully, and in whom he excluded hereditary and acquired disease which might obscure or complicate the diagnosis. He further said, "From these and from many other cases seen by the writer, it is apparent that the amount of gas necessary to produce the most profound nervous disorders is exceedingly small, indeed so small that many men and women of experience and education have been permanently injured, owing to the fact that they have failed to appreciate the grave dangers that always exist when coal gas or illuminating gas is inhaled in quantities sufficient to be detected by the normal sense of smell." Egdahl²⁰ listed the immediate symptoms of chronic poisoning as tingling and twitching of the limbs, irritability, numbness of the various parts of the body, feeling of weight in the chest, rigidity of the fingers and toes, attacks of shivering, extreme thirst, various subjective heart symptoms, distress and pain referred to the heart and respiratory distress, while objectively pallor, loss of flesh, red patches over the cheek bones, shiny glittering eyeballs, enlarged pupils, and irregular pulse were noted. Henderson and his associates²¹ at Yale University, in their extensive study of the physiological action of carbon monoxide, described the early effects as follows, "But of all signs and tests the typical carbon monoxide, or oxygen deficiency, headache proved most definite and reliable. It is a distinctly localized pain, usually frontal, throbbing, intensified by lying down or exertion. It is sometimes accompanied by more or less nausea, readily increased to vomiting. The mind is not clear, except by an effort, and one's surroundings seem a little strange. The temper is easily upset, very much as in alcoholic intoxication, and the judgment is likely to be bad. There are wide variations in the degree of this headache, but in the experiments discussed in this section it was never extreme. On the border line it merged merely into slight lassitude. As a criterion of the effect of carbon monoxide,

however, it is more distinct than any artificial test. Concentrations of gas too weak and periods of exposure too short to induce this sign in anyone may be considered entirely harmless." Luden²² reported an interesting personal experience with the gas in her home, and referred to its peculiar action in adhering to objects as garments, rugs, bedding and furniture for lengths of time. The situation pertaining to poisoning in industry has been dealt with by Maver²³ and by Hayhurst²⁴. A consideration of what effect it may have on the not fully developed and growing tissue of infants and children would appear to be important,²⁵ as it is generally conceded that they are affected more rapidly than adults. On the other hand, McCombs²⁶ analyzed 1,000 cases of acute gassing but did not observe chronic sequelæ. Most other writers have laid particular emphasis on the occurrence of such sequelæ.

A finding of diagnostic importance is a rise in the number of red blood cells and in the amount of hæmoglobin, a compensatory mechanism to make up for the cells lost to the circulation through combination of their hæmoglobin with carbon monoxide. Karasek²⁷ examined the blood of operators in iron mills who were exposed to it but who did not show symptoms. Their blood showed a polycythæmia of 5,550,000 to 9,676,000 with hæmoglobin of 95 to 125 per cent, but with no morphological changes in the cells. Nasmith and Graham,²⁸ in an experimental study in which guinea pigs were exposed constantly to an atmosphere of carbon monoxide sufficient to maintain a blood saturation of 25 per cent, found a definite rise in the number of red cells and in the amount of hæmoglobin.

It is true that considerable tolerance to the effects of exposure is developed on the part of some individuals, and also that an amount sufficient to adversely affect some persons shows little or no effect on others. The effects vary in different individuals, suggesting a varying resistance of different parts of the body. In the literature²⁹ to ⁴⁴ one finds many reports of cases of chronic carbon monoxide poisoning, showing a great variety of signs and symptoms. The protean manifestations of its action make it one of the most diversified of diseases.

PATHOLOGY

The pathological findings in patients dying of or a short time after acute poisoning are, as

reported by Stewart⁴⁵ and by Hill and Semarak,⁴⁶ of the nature of degenerative changes in the central nervous system and peripheral nerves. Stewart reported the histological examination of sections of brain, spinal cord, and peripheral nerves in a patient who died twenty-four days after gassing. He found intense universal cerebral degeneration, bilateral softening in the basal ganglia, and a widespread cortical softening confined to the deeper layers of the grey matter, and concluded that the brunt of the damage fell on the central nervous system. Hill and Semarak in a series of cases found a bilateral ischaemic necrosis of the lenticular nucleus to be a characteristic lesion and felt that carbon monoxide poisoning might be the cause of subsequent nervous and mental disease. They also concluded from the histological appearance of the capillaries that the endothelium was extremely vulnerable. The pathological changes in chronic poisoning are likely similar to these but varying in degree of damage. The diffuse and varied involvement of the nervous system makes understandable the bizarre conditions observed clinically.

ACTION OF CARBON MONOXIDE

The manner in which carbon monoxide acts has been the subject of many investigations. Haldane,⁴⁷ in 1895, in his classical paper "The action of carbonic oxide in man," stated that "the symptoms are due solely to deficiency in the oxygen percentage of the blood and are similar to those experienced by mountaineers and balloonists at high altitudes." Many writers have felt that there is a direct toxic action on tissue, but among physiologists the view of Haldane is generally accepted. The poisonous action of carbon monoxide is due to the fact that the gas combines with haemoglobin, replacing oxygen. If completely saturated the blood would hold the same amount of this gas as oxygen, that is 600 c.c. Thus the blood is prevented from carrying the normal amount of oxygen and the animal dies, if the process has gone far enough, from want of it, or if death does not take place serious damage may be done to the tissues of the nervous system from the anoxemia induced. The symptoms of poisoning do not become appreciable during rest until the blood is about one-third saturated. An individual in this condition suffers from palpitation and throbbing of the head and is liable to

become dizzy or faint on any exertion, such as that of ascending stairs, or on sudden exposure to fresh air.

Carbon monoxide has an affinity for the haemoglobin of human blood about three hundred times greater than that of oxygen, and so readily displaces it. The reaction takes place according to gas laws and there is a definite relation between the proportion of carbon monoxide in the air and the extent to which it combines with the haemoglobin of the blood of an individual which has been sufficiently long in such an atmosphere to allow the maximum blood saturation to occur. Many hours of exposure are required to produce this effect. In the typical case of poisoning, the time during which the patient is exposed to the action of the gas is usually not long as in accidental gassing in factories in passage through gas-laden areas and in industrial accidents, and so these figures are not very applicable. Henderson and his co-workers⁴⁸ have shown that half the maximum saturation possible in a given atmosphere occurs, it is estimated, about one hour's time, and these figures may be practically applied to problems of poisoning. The safe limit of contamination of air for a period of exposure of one hour or less has been fixed by him at four parts carbon monoxide or 10 000 parts of air, giving a blood saturation of 16 per cent in 50 minutes the same could be reached with one part in 10 000 in many hours. This limit is considered safe for invalids and children as well as for robust adults. Such a standard is much higher than that advised by Haldane for the London tunnels, one part in 10 000 but as Henderson points out, the latter was for periods of much longer exposure so that the two standards are in virtual agreement.

Rules arrived at by Henderson and his co-workers⁴⁸ which may be applied to given situations are: When the time in hours multiplied by the concentration of carbon monoxide in parts per 10 000 equals 3 there is no perceptible physiological effect. When it equals 6 there is just a perceptible effect. When it equals 9 headaches and nausea are induced. When it equals 15 or more the conditions are dangerous to life. If the volume of breathing is increased by exercise (even by slow walking and correspondingly more by physical work) the rate of absorption of carbon monoxide is increased proportionally. After return to fresh air the

elimination of carbon monoxide through the lungs proceeds at a rate of 30 to 60 per cent reduction of the blood saturation per hour." It is seen that the gas has a cumulative action, a prolonged exposure to a low concentration having essentially the same effect as a short exposure to a high one. This is to be distinguished from the cumulative effect seen in chronic poisoning, which is rather the result of anoxæmia caused by frequently repeated gassing. The gas itself remains in the blood only a short time after the subject returns to fresh air. Sayers, Meriwether, and Yant⁴⁸ also studied the effect of exposure to low concentrations, and concluded that the rate of combination, while slow when the subject is at rest, was more rapid when active, that the rate of combination took place much more rapidly during the first hour of exposure than subsequently, and that high temperature and humidity caused more rapid union.

DIRECT TOXIC EFFECT OF CARBON MONOXIDE

Evidence has been brought to show that carbon monoxide under experimental conditions, may have a direct toxic effect on tissue. J. S. Haldane⁴⁹ proved that mammals could live on oxygen dissolved in their blood under high pressure, when almost all their hæmoglobin was combined with carbon monoxide. J. B. S. Haldane⁵⁰ caused death in rats under similar circumstances, by adding more carbon monoxide, showing that direct poisoning of tissue could occur, as the animals already had their hæmoglobin saturated and were living on oxygen dissolved in the plasma. Similar conditions do not, however, obtain in everyday life. Haggard⁵¹ studied the growth of neuroblasts in the presence of carbon monoxide, and found that even in a concentration of 79 per cent no ill effects were observed in the growing nerve cells. In this respect the gas was as neutral as nitrogen. He concluded that carbon monoxide had no specific reaction with nerve tissue, but acted in the body only through the asphyxia, incident to its combination with hæmoglobin. O'Brien and Parker⁵² determined its solubility in serum and plasma and concluded that the amount dissolved in cases of poisoning under ordinary conditions was so small that no allowance need be made for it. Stadie and Martin⁵³ showed that the presence of carbon monoxide altered the oxygen dissociation curve of hæmoglobin and lowered the partial pressure of oxygen in the capillaries, thus de-

pressing the rate of its diffusion to the tissues. The anoxæmia is, then, not entirely due to a reduction of the oxygen of the blood, but also to a lessening of availability of that oxygen which is present. In this way a person whose blood might be half saturated with carbon monoxide would be in a very serious condition, whereas one who had half the usual amount of hæmoglobin as a result of anæmia or hæmorrhage would be in comparative safety. An individual having 15 or 20 per cent of his hæmoglobin saturated, a deficiency which, under ordinary circumstances, would be little noticed, suffers from a much greater degree of anoxæmia. Nasmith and Graham²⁸ exposed guinea pigs continuously for fifteen months in an atmosphere of carbon monoxide sufficient to cause a 25 per cent saturation of their blood. They said "Of the twelve guinea pigs originally placed in the gas chamber fifteen months ago, one died of old age after two months confinement, four died at one time through the carelessness of the attendant, one after seven months was transferred to fresh air again, and five have been killed for pathological study. None of the animals decreased in weight, on the contrary most of them gained. After the first few days, those living with 25 per cent of their hæmoglobin saturated with carbon monoxide appeared just as active and happy as those living in the air." It would seem from this that the gas is innocuous as far as guinea pigs are concerned, and these results probably indicate that small animals are not suitable for the investigation of chronic poisoning as seen in man. Zeigler⁵⁴ produced late mental and nervous symptoms in dogs by gassing them with illuminating gas. In all likelihood the nervous constitution of an animal determines the effect of carbon monoxide upon it, the higher being more susceptible than the lower. On the whole, there is little evidence that carbon monoxide exerts a direct toxic effect on nervous tissue under clinical conditions.

The term carbon monoxide is loosely used in the literature, except by laboratory workers. It is assumed to be the poisonous agent in various mixtures of gases. While it is certainly the main one, it may not be the only one. Haggard⁵¹ showed that pure carbon monoxide had no effect on neuroblastic cultures, but he also showed that illuminating gas was toxic for them in concentration even as low as 0.1 per cent, and concluded that it contained another toxic substance.

The toxicity of pure carbon monoxide, illuminating gas, exhaust gas from gasoline and exhaust gas from coal distillate, has been compared by Henderson and his associates²¹ by gassing dogs to the point of death and examining the blood. With pure carbon monoxide, an average of 84 per cent blood saturation was found, with illuminating gas an average of 70 per cent, accompanied by nausea and vomiting which were lacking in the experiments with the pure gas, with gasoline exhaust, an average of 83 per cent, much similar to pure gas, and with coal distillate, an average of 62 per cent, nausea and vomiting more severe than with illuminating gas, and in addition a brownish tinge to the blood indicating a destructive influence on the hæmoglobin. Hamilton² referred to loss of consciousness in benzol poisoning with two or three parts of benzol in 100,000 parts of air, and in one instance death from typical benzol poisoning from exposure to one part in 10,000. It would seem quite probable that some of the effects of gas poisoning may be due to minute quantities of substances other than carbon monoxide, although without doubt the major effect is due to it.

PREVENTION

Since treatment is of little avail after the damage caused by chronic poisoning is done, the approach to the problem lies entirely in prevention. This consists in reducing in all ways possible our contact with the gas. In industry much is being done to protect workmen, but it is unlikely that anything will be done to protect the general public from such an ubiquitous source of carbon monoxide as the gasoline engine until an enlightened public opinion demands it. A vertical exhaust, as a remedy, has been tested and proposed by Henderson and Haggard⁵. The heated gases, thrust upward escape into the air above the street and are rapidly carried away, but when expelled along the ground are chilled by the cold surface, mixed with the air by other vehicles, and lie in a poisonous layer at respiratory level. We cannot allow furnace smoke to escape at street level. Why should we permit automobile exhaust gas to do so, especially when it is so much more dangerous than smoke from chimneys? In round-houses each locomotive has a chimney through which smoke escapes. It would seem possible for every garage to have an outlet in

the roof through which exhaust gas thrown upward from a vertical pipe would escape to the outer air and so reduce the increasing death rate from accidental asphyxiation. It is not likely that motor car manufacturers of themselves will alter the design of cars to meet this problem.

Much carbon monoxide escapes into homes from leaky illuminating gas pipes and fixtures, and from poorly adjusted gas stoves, and is breathed by the occupants for long periods of time without the realization that it is present. Especially is this so when the sense of smell is not acute, as is the case with many people. Were careful inspection for leaking gas instituted as is made for uninsulated electric wiring, much of this would be eliminated. But the danger of fire from small quantities of gas being negligible, the incentive for inspection is lacking and will not be supplied until a realization of the health menace from carbon monoxide makes it imperative.

There seems little reason for the extreme anxiety shown by some writers, lest the production and accumulation of carbon monoxide seriously handicap or endanger our present civilization. A writer in *Science*⁶ said, "There is probably more carbon monoxide produced during a severe lightning storm in a given locality than is emitted by our coke burners, gas engines and other sources in industry during much longer periods." Serious as is the problem and beset with difficulties not often encountered in public health work, there would appear to be no reason why it should not be met successfully.

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DERMATITIS VENENATA*

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DERMATITIS venenata is a very large subject. Newer work on the problem is clearing up the field, and the purpose of this paper is to offer and discuss a few examples of the dermatoses caused by external irritants. Emphasis will be placed on those coming under the classification of occupational or industrial, as these are the most important, economically, to the worker, and unless they are studied carefully, we cannot expect to get proper recognition from the employer or the compensation board. In England these cases are carefully investigated by the compensation authorities. Some states in the American Union do this also, while others depend on insurance companies, but in Ontario there is no adequate clause covering these cases, unless a definite injury precedes the attack, and then it is classed as an injury. Therefore, a very careful history must be taken of the patient's past, as well as present, environment that the case may be properly presented if necessity arises. Although the treatment of the patient seems most important, yet the hy-

gienic and prophylactic aspect of the case should be carefully explained to him, thus teaching him how best to avoid future attacks. Many of these patients have had recurrences, have been told that it was their blood, and are hard to persuade that blood medicine is unnecessary.

Going over my statistics roughly, I would estimate that about 20 per cent of cases seen in my practice are dermatitis, and fully 75 per cent of these would come under this grouping, either directly or indirectly, therefore an insight into the "why" is all important. R P White says, "As etiology disentangles the causal from the casual, we realize that there are comparatively few idiopathic or primary eczemas," and if the name of the offending irritant cannot be given, the terms "traumatic," "occupational," or "professional" should be prefixed. The all important point to remember is that in every occupation the worker is exposed to irritants, and every irritant can cause a dermatitis in a susceptible skin. This depends on the sensitivity of the individual epidermis or tissues exposed, and such a sensitivity can be acquired, similarly to that of horse serum and other proteins, by con-

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SOME OBSERVATIONS ON THE EFFECT OF BLUEBERRY LEAF EXTRACT IN DIABETES MELLITUS

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REFERENCES to various so-called insulin substitutes have appeared in recent medical literature. The term 'insulin substitute' is perhaps an unhappy one. To those familiar with the beneficial effects of insulin in diabetes, the search for a substitute for this potent remedial agent may seem unwarranted. The efficacy of insulin in the treatment of diabetes mellitus is indisputable. Its mode of administration, however, bears disfavor. No method of administering insulin has yet been successful except by subcutaneous injection. Hypodermic medication, continued day after day, with unemitting care and precision is objectionable for very obvious reasons. Moreover, insulin is a powerful drug which, if misused in the hands of patients, possesses potentialities of due consequence. Hence, hope ever exists that some substance may be prepared which when taken orally is capable of exhibiting the desirable properties of insulin, but is devoid of its disadvantages. Such an ideal therapeutic agent is not yet available.

The amount of insulin absorbed from the gastro-intestinal tract has generally been considered too insignificant to be of any real value in the treatment of diabetes. However, the observations of Murlin and Hawley¹ suggest that pancreatic hormone replacement by this route may not be an impossibility.

In the absence of an insulin-containing product which is efficient when taken by mouth, it may not be amiss to investigate certain non-pancreatic preparations from the standpoint of a possible salutary influence upon the carbohydrate tolerance of diabetic patients. Remedies of this class which have received attention recently are synthalin and blueberry leaf extract. Synthalin, although it appears to offer certain possibilities, is apt to give rise to unpleasant toxic by-effects. Blueberry leaf extract seems to be harmless, but its proper evaluation as a factor in the treatment of diabetes has not yet been decided. The following data have a bearing upon this latter consideration.

PREVIOUS OBSERVATIONS

Experimental evidence points to the existence in many or all plants of a substance which affects carbohydrate metabolism.^{2,3,4} The leaves of the blueberry plant are said to contain this ingredient in relative abundance, in a form which permits of extraction.

The physiological action of an extract prepared from blueberry leaves was first investigated by Mark and Wagner.⁵ This investigation was soon followed by observations relative to its effect in depancreatized dogs.⁶ The variable results obtained by these workers were explained by the demonstration of two antagonistic principles in their preparations. The one tended to raise the blood sugar, the other to lower it. An attempt was made to separate and purify the latter substance, and the resulting product was given the name myrtillin.

On this continent, the problem has been investigated chiefly by F. M. Allen,⁷ who believes "that myrtillin plays some accessory part in carbohydrate metabolism and that, if properly used, it will prove valuable as an accessory factor in diabetic treatment." This contention was the outcome of experimental observations in totally and partially depancreatized dogs and in clinical cases of diabetes. The lives of depancreatized dogs were prolonged by the use of myrtillin. Fluctuations in the blood sugar under similar conditions were apparently not so marked, and the amount of insulin required by the animals was probably less than when no blueberry leaf extract was used. Even the largest doses were without evident toxic effects.

Allen was able to report on eighty-one cases of diabetes treated with the drug. In sixty of these, conditions were such as to permit of comparative studies. Beneficial results, attributable apparently to blueberry leaf extract, were believed to have been obtained in thirty-six cases of this latter group, as evidenced by their ability to tolerate a higher daily consumption of carbohydrate, to decrease the amount of insulin, or

TABLE I
SUMMARY OF CASES TREATED WITH BLUEBERRY LEAF EXTRACT

Case No	Age (yrs)	Sex	Known duration of the diabetic condition	Relative Severity of the Diabetes	Before Blueberry Leaf Extract		After Blueberry Leaf Extract	
					Insulin (Units per day)	Total Carbo hydrate* (G per day)	Insulin (Units per day)	Total Carbo hydrate* (G per day)
1	70	F	8 months	Moderately Severe	30	86	0	98
2	43	M	2 years	Mild	20	130	8	130
3	16	F	18 months	Severe	50	110	16	150
4	53	F	5 years	Mild	0	93	0	93
5	61	M	4 years	Moderately Severe	38	99	15	114
6	49	M	1 year	Moderately Severe	40	113	45	113
7	29	M	8 months	Mild	0	108	0	128
8	77	F	3 months	Mild	0	80	0	130
9	30	M	9 years	Severe	75	99	80	97
10	12	M	5 years	Severe	52	81	55	73
11	60	M	1 year	Moderately Severe	20	94	40	94
12	40	F	? (Less than 2 years)	Mild	30	116	0	140
13	12	F	1 year	Moderately Severe	60	94	40	107
14	66	F	4 years	Severe	45	90	70	84
15	23	M	2 years	Moderately Severe	65	125	65	125
16	67	F	1 year (?)	Moderately Severe	20	98	0	98

*Total Carbohydrate Content of Diet = 100% C + 58% P + 10% F

TABLE II
CASE 16—MODERATE & SEVERE DIABETES IN AN EDEMAN PERSON, TREATED WITH INSULIN AND BLUEBERRY LEAF EXTRACT

Date	Diet				Urine			Blood Sugar (Mg %)	Insulin (Units per day)
	Carb	Prot	Fat	Cal-ories	Sugar	Acid acet. acetic	Acetone		
1928									
4-7	?	?	?	?	++++	neg	neg	267	0
4-10	20	20	40	520	neg	neg	+	10	0
4-17	45	55	120	1480	neg	neg	trace	161	20
4-23	50	60	130	1610	+	neg	neg	185	20
4-30	50	60	130	1610	reg	neg	reg	143	30
5-7	50	60	130	1610	+	neg	++	182	38
5-10	50	60	130	1610	reg	neg	neg		40
5-12	50	60	130	1610	neg	neg	neg	90	30
5-14	50	60	130	1610	neg	neg	neg	122	30
5-21	50	60	130	1610	neg	neg	neg	116	20
5-26	50	60	130	1610	++	neg	neg	174	10
5-26	Blueberry Leaf Extract Started								
5-28	50	60	130	1610	trace	neg	neg		20
5-31	50	60	130	1610	neg	neg	neg	119	20
6-4	50	60	130	1610	Ft trace	neg	neg	103	10
6-7	50	60	130	1610	neg	neg	neg		6
6-9	50	60	130	1610	trace	neg	neg	108	3
6-14	50	60	130	1610	neg	neg	neg	111	3
6-18	50	60	130	1610	neg	neg	neg	119	0
6-22	50	60	130	1610	neg	neg	neg	96	0
6-26	50	60	130	1610	neg	neg	neg		0

both In general, the best results were obtained in the milder cases and in middle-aged or elderly patients Myrtillin never caused hypoglycæmia, but rather tended to prevent hypoglycæmic reactions due to insulin The beneficial effects, when obtained, were indefinite in duration, and seemed to be prolonged, after stoppage of the remedy, for from one to several weeks This phenomenon was explained on the assumption of storage within the body The mode of action of myrtillin in bringing about improvement in carbohydrate tolerance is unknown It has been suggested that the active principle may be of the nature of a vitamine In this regard, it is noteworthy that Mills⁴ has recently obtained encouraging results in the treatment of diabetes with a vitamine-rich extract of various plants administered by mouth His preparation, however, was without effect in depancreatized dogs, but it increased glycogen storage in the livers of rabbits kept on a constant diet

FURTHER DATA

There are recorded here the results of the administration of blueberry leaf extract to sixteen patients with diabetes mellitus of varying grades of severity and varying lengths of duration The extract was supplied in the form of tablets, 0.3 grm each, one tablet being given one hour before meals The results are summarized in Table I The blood sugar estimations were carried out by the Folin-Wu method, upon blood samples obtained during the morning fasting state, unless otherwise designated Apparently beneficial effects were obtained in nine cases (56 per cent) As noted above, Allen claimed beneficial effects in 60 per cent of a larger series of cases

In Table I, the insulin dosage before the exhibition of blueberry leaf extract refers to the amount of insulin received by these patients immediately before blueberry leaf extract was started, not the maximum requirements of the

TABLE III

CASE 2—MILD DIABETES IN AN ADULT TREATED WITH INSULIN AND BLUEBERRY LEAF EXTRACT

Date	Diet				Urine			Blood Sugar (Mg %)	Insulin (Units per day)	Remarks
	Carb	Prot	Fat	Cal-ories	Sugar	Acid aceto acetic	Acetone			
1926										
6-21	?	?	?	?	++++	+	+	330	0	
10-18	159	84	135	2187	neg	neg	neg		0	
1927										
3-8	60	70	180	2140	+++	neg	neg		0	
5-28	60	70	180	2140	++	neg	trace		10	
8-29	50	70	160	1920	neg	neg	neg		20	
10-12	80	60	150	1910	Ft trace	neg	neg		20	
12-5	85	50	160	1980	neg	neg	neg	111	20	
12-13	85	50	160	1980	neg	neg	neg	114	20	
12-21	Blueberry Leaf Extract Started									
12-31	85	50	160	1980	neg	neg	neg		16	
1928										
1-4	85	50	160	1980	neg	neg	neg	119	13	
1-7	85	50	160	1980	neg	neg	neg		5	
1-12	85	50	160	1980	+	neg	neg	130	5	
1-16	85	50	160	1980	+++	neg	neg	136	16	Pt has "cold"
1-23	85	50	160	1980	neg	neg	neg	119	27	Pt has "cold"
2-8	85	50	160	1980	neg	neg	neg		36	Pt has "cold"
2-15	75	50	160	1940	neg	neg	neg		40	Pt has "cold"
2-21	75	50	160	1940	neg	neg	neg	133	23	
2-27	75	50	160	1940	neg	neg	neg	122	15	
3-3	75	50	160	1940	neg	neg	neg		10	
3-15	85	50	160	1980	++	neg	neg	142	5	
3-20	Blueberry Leaf Extract Stopped									
3-27	85	50	160	1980	neg	neg	neg	133	8	
4-2	85	50	160	1980	neg	neg	trace	166	8	
4-8	85	50	160	1980	++++	neg	trace	183	8	

individuals previous to this time. The insulin dosage after blueberry leaf extract indicates the minimum amount of insulin needed after the use of the tablets. For example, the case record epitomized in Table II shows that an attempt was made to reduce the daily requirement of insulin to a minimum while maintaining the urine aglycosuric and the fasting blood sugar normal, first without blueberry leaf extract, and afterwards with blueberry leaf extract. This patient, on admission to hospital, presented the manifestations of moderately severe diabetes. The diet and insulin were as indicated. The insulin was gradually reduced, from a maximum of forty-five units per day on a constant diet to twenty units without glycosuria and without elevation of the fasting blood sugar. But when the insulin was further reduced to ten units per day, glycosuria appeared and the blood sugar rose above the normal. The patient was again

given twenty units of insulin a day, and blueberry leaf extract was started. After about one week, reduction of the insulin was once more attempted. The insulin could now be eliminated entirely, the urine still keeping sugar-free and the blood sugar normal.

Considerable variations in effect were encountered in different patients and in the same patient at different times. Such discrepancies were referable, perhaps, to variations in potency of several lots of tablets or to vagaries in absorption. The effects of the remedy were lost in the presence of even a slight infection (Table III). Ketosis was not readily corrected by the drug (Table IV). As regards the inhibiting effect of blueberry leaf extract upon hypoglycæmic reactions, it may be said that blood sugar concentrations as low as 0.047 per cent have been observed during the period of its administration, without the usual manifestations of insulin shock.

TABLE IV

CASE 3—SEVERE DIABETES IN A YOUNG PERSON TREATED WITH INSULIN AND BLUEBERRY LEAF EXTRACT

Date	Diet				Urine			Blood Sugar (Mg %)	Insulin (Units per day)	Remarks
	Carb	Prot	Fat	Cal-ories	Sugar	Acid aceto-acetic	Acetone			
1927										
9-21	?	?	?	?	++++	+++	+++	316	0	Weight, 92 lbs
9-29	70	35	120	1500	neg	neg	neg	124	60	
10-2	70	40	140	1700	++	neg	neg		85	
10-10	70	40	170	1970	neg	neg	neg	200	70	
1928										
1-13	70	50	160	1920	neg	neg	++++	166	50	Weight, 110 lbs
1-13	Blueberry Leaf Extract Started									
1-20	70	50	150	1830	+++	trace	++	172	40	
1-27	70	50	150	1830	++	neg	neg	168	40	
2-10	70	50	150	1830	neg	neg	neg	128	40	
2-17	70	50	150	1830	neg	+	+++	94	30	
3-2	80	50	150	1870	neg	+	+++	132	20	
3-9	80	50	140	1780	neg	trace	++	105	20	
3-16	90	55	130	1750	neg	+	+++	103	18	
3-23	100	45	140	1840	neg	neg	neg	129	16	
3-23	Blueberry Leaf Extract Stopped									
3-30	100	55	140	1880	++	neg	neg	140	16	
4-6	100	55	140	1880	+++	neg	trace	164	16	
4-6	Blueberry Leaf Extract Restarted									
4-13	100	55	140	1880	++	neg	+	95	16	3 30 p m
4-20	100	55	140	1880	neg	++	+++	149	18	
5-4	95	55	130	1770	Ft trace	neg	+	69	20	
5-11	95	55	130	1770	neg	neg	neg	109	18	
5-18	Blueberry Leaf Extract Stopped									
5-25	95	55	130	1770	neg	neg	neg	82	20	Weight, 117 lbs 3 00 p m
6-1	95	55	130	1770	trace	neg	neg	85	20	
6-8	95	55	130	1770	+	neg	neg	108	25	
6-15	95	55	130	1770	++	+	+++	71	30	

But reactions have not been absent. The effects could not be appreciably augmented by giving double the usual dose.

DISCUSSION

The above results, based upon purely clinical observations, would seem to support Allen's view that blueberry leaf extract has a stabilizing influence upon the carbohydrate tolerance of certain cases of diabetes. That it cannot take the place of insulin need not be gainsaid. But, if it can be shown to permit the dosage or frequency of administration of insulin to be decreased, or cause insulin to be eliminated entirely in certain cases, or allow for added carbohydrate intake without increasing insulin, its use is justified. Judgment regarding the value of a therapeutic agent of this sort is truly difficult and one must weigh the evidence carefully before arriving at conclusions. The fallacy of basing opinions upon a small number of observations is also realized. As everyone familiar with the malady knows, the course of diabetes is variable. There exist all grades of severity between the case which can be readily controlled by minor dietary restrictions and that which cannot be balanced even with large doses of insulin. That carbohydrate tolerance does improve as a result of, or in spite of, insulin is common experience. An example is shown in Table V, in which the daily amount of insulin was reduced from fifty-five

units to zero in the course of about eight weeks. Had any treatment been employed other than that which was used in this case, one might have been led to quite erroneous deductions.

Tangible evidence in favour of the regeneration of pancreatic islet tissue as a result of insulin has been furnished by Boyd and Robinson.⁸ It is also true that the daily insulin requirements of many patients remain unaltered or even need to be increased. Such cases have been reported by Newburgh,⁹ Harrison¹⁰ and Brace.¹¹ Efficient diabetic therapy is a composite process to which many factors contribute. Whereas insulin acts as a specific under certain conditions, the mainstay of diabetic treatment still lies in the realm of dietary regulation. The importance of under-nutrition has been emphasized by Rabinowitch.¹² Other factors which are known to influence carbohydrate metabolism in the diabetic, such as muscular exercise, infections, an altered basal metabolism, and time, should be given their proper due in any individual case.

Therefore, one may justly ask the following questions: Was the association of blueberry leaf extract administration and improvement in carbohydrate tolerance in the cases above mentioned merely a matter of chance? Could the recuperation of the metabolic functions be accounted for by one or several of the factors to which reference has just been made? Were these patients, at the time the blueberry leaf

TABLE V
CASE J. P. MAE, AGE 27—INSULIN REDUCED FROM 55 UNITS PER DAY TO ZERO
WITHOUT BLUEBERRY LEAF EXTRACT

Date	Diet				Urine			Blood Sugar (mg. per 100 cc.)	Insulin (Units per day)	Remarks
	Carb.	Fat	Calories		Sugar	acid	acetone			
1-27					— + + +	neg	— + +	333	0	Admission to Hospital Weight 177 lbs
8-16	20	30	63	740	— + +	neg	—	168	45	
8-19	25	0	75	975	trace	neg	—	158	45	
8-23	30	60	90	1170	neg	neg	neg		55	
9-7	60	70	125	1645	neg	neg	neg	181	45	
9-17	70	70	150	1910	+	neg	neg	170	45	
9-24	60	70	160	2080	neg	neg	neg	120	50	
9-29	60	70	160	2080	neg	neg	neg		35	
10-3	90	70	90	2080	neg	neg	neg	128	15	
10-10	90	70	150	2080	neg	neg	neg	114	5	
10-20	90	70	150	2080	neg	neg	neg	95	0	
11-15	90	70	160	2080	neg	neg	neg		0	
1928										Weight, 151 lbs
1-28	75	60	170	2070	neg	neg	neg		0	
2-8	75	60	170	2070	neg	neg	neg	114	0	
3-2	75	60	170	2070	neg	neg	neg		0	

was started, receiving more insulin than their required minimum? These are, of course, all possibilities. The only reply to such speculations is that in several instances unsuccessful attempts at insulin reduction or dietary increment had been made before blueberry leaf extract was given, also, there were indications in certain cases of a decline in carbohydrate tolerance when the extract was withdrawn.

If a preparation, such as that under consideration, possessing possible insulin-like properties, is to be available for general use, some means of standardization is necessary. To date, a satisfactory method for this purpose does not seem to have been evolved, hence, a uniformly potent product can not be assured.

SUMMARY AND CONCLUSIONS

A limited experience with the use of blueberry leaf extract in the treatment of diabetes mellitus permits the following generalizations, in which the claims of Allen have been at least partially verified.

1 Blueberry leaf extract appears to exert a beneficial effect in certain cases of diabetes. Its action is not consistent.

2 Its utility is most apparent in middle-aged or elderly patients, and in mild cases of the disease.

3 Owing to its relatively slow and feeble action, the drug is of no avail in the emergencies or complications attendant upon diabetes.

4 Blueberry leaf extract can not be regarded as a substitute for insulin, generally, but it may become an adjunct in the treatment of diabetes.

5 Blueberry leaf extract is without evident deleterious effects. It does not give rise to serious hypoglycæmia.

6 Withdrawal of the drug may be accompanied by a partial relapse in carbohydrate tolerance after a variable length of time.

7 Finally blueberry leaf extract has, at best, a limited application in the treatment of diabetes, and exaggerated confidence in any therapeutic agent is to be deprecated.

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An Address

ON

ASTHMA*

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ASTHMA is a constitutional disease with an hereditary tendency. That it is constitutional is shown by the manner in which it may recur after an absence of several decades. The hereditary factor is also well established. It is as fitting to speak of an asthmatic constitution as it is to speak of a melancholic disposition. If one regards the asthmatic as one who is capable of having asthma it is hardly an exaggeration to say "Once an asthmatic, always an asthmatic."

Since Sir John Flower published his classical

treatise in 1698, opinion of the muscles of the smaller bronchi has been taken as the cause. Kessler recently did experiments to substantiate this, but other investigators state that the cause is not so certain and that probably action of the epithelial cells lining the bronchi produces the narrowing. I have tried to demonstrate spasm by means of lipiodol injections into the lung but have not been successful. There was no apparent difference in the width of the shadow during an attack compared with its width during the freedom from asthma experienced after injection of adrenalin. Cocainization of the throat for

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lipiodol instillation will in itself usually relieve the attacks and it is difficult to keep much lipiodol in the bronchus on account of the irritable cough most asthmatic patients have. I have made a direct observation of the bronchial mucosa through a bronchoscope at Dr Haslinger's clinic in Vienna. The bronchi are filled with tenacious bubbling mucus and the lumina of the larger visible bronchi narrowed only in the same degree as when a patient not subject to asthma coughs. The mucosa has exactly the same appearance as the nasal mucosa in hay-fever. The membrane is of a deep red colour, with a few paler mottled areas. It is definitely swollen and a probe sinks into it more deeply than in the normal. It is normal between the attacks. Postmortem studies of patients who have died from acute asthma confirm this. The cilia are absent from the epithelial cells and the submucosa is very oedematous. The heart is normal. The evidence is more definite that this vasomotor swelling of the epithelial and subepithelial tissues, together with the increased viscid secretion from the mucous glands, is a cause of bronchial narrowing rather than muscular spasm of the bronchioles.

While we are very familiar with many of the external phenomena of asthma, we do not know either its true nature or its fundamental cause. Research here may some day open up to us better means of treatment, but for the present, the management of the disease is of more immediate importance. I must here confess that I have not been able to duplicate the good results published in many of the journals and recent text-books no medicine. One of the most difficult of problems is to establish a therapeutic fact in the case of a non-fatal disease. A glance at the pages of medical history shows us how frequently even the great masters in medicine saw the results they wished to see following some method of treatment which we know now could have had no effect whatever on the course of the disease. One thing is certain, in speaking of the result of treatment in asthma we should banish the word "cure" and speak of "freedom from symptoms," for one year or five year periods, and with this we should be ever mindful that asthma is a disease in which the most unexpected remissions occur spontaneously, especially in the young.

As asthma varies enormously in its severity and persistence, a classification may help. From the standpoint of management a classification according to age is probably the most useful. The first group comprises babies up to three years

of age, the second group, from three to thirty-five years, and the third group over thirty-five.

These types of asthma and their necessary investigation can be best illustrated by typical cases.

CASE 1

D A a baby three weeks old developed in September 1922, a generalized, weeping eczema. His family history showed some member to have had asthma or hay fever for the past five generations. He gave positive cutaneous reactions to egg and both human and cow's milk. As restricting the mother's diet in the matter of eggs and cow's milk did not help him, he was weaned and put on dried milk. With this he showed an appreciable improvement, but a definite eczema remained. Ointment made up of 25 per cent tar produced a good result, so that during the following summer only a few eczematous areas remained on the hands and face. In November, 1923, he developed bronchitis and asthma. Cutaneous protein reactions at this time were still positive to egg, but negative to milk. He now showed additional reactions to rabbit hair and duck feathers. Rabbit hair is frequently used in mattresses but placing him in a special room away from contact with hairs and feathers produced no change. We expected that it would. A course of protein desensitization gave relief in about six weeks. He had only very slight attacks until 1925, and his mother then noticed that bananas were a cause of his attacks. Although he still showed a slight cutaneous reaction to duck feathers and rabbit hair he showed no reaction to banana protein. The mother then gave a small amount of banana on two occasions and asthmatic attacks followed each feeding. He had attacks apart from taking bananas, however. After a further course of desensitization with rabbit hair and duck feathers and by avoiding bananas, he has remained well until the present.

Tonsillectomy and adenoidectomy do not seem to help such cases. For one that is improved another is made worse. Ephedrine, in quarter grain doses, usually gives satisfactory relief for six hours, but it causes constipation. Tar ointment is a valuable adjunct in the treatment of eczema. The administration of cod liver oil or one of the vitamin D concentrates is a useful prophylaxis for the bronchitis which aggravates the asthma.

CUTANEOUS REACTIONS TO PROTEINS

The protein reactions may be discussed here. The procedure is simple and requires about an hour. Keep the groups of the protein vials in envelopes labelled "vegetables," "meats," "milk," and "eggs," etc. Make a series of small scratches on the arm of an adult or the back of an infant so as barely to draw blood. Place a small drop of one-tenth normal solution of sodium hydroxide beside each scratch. Take, on the end of a toothpick, a small amount of powdered protein from the vial and place it in the scratch, rubbing in the sodium hydroxide to dissolve the protein. Place in a row the vials from which the proteins have been removed separating each group, such as vegetables, meats, etc., with a toothpick.

Make a penmark at the end of the corresponding group of inoculated scratches on the arm. In this manner one can locate the protein causing the reaction. The reactions occur in five to ten minutes as white raised wheals surrounded by a red blush. It is well to note the size of the wheal. The larger it is, the more definitely is the cause established.

The list of proteins need not be large. If one employs more than one hundred in a large series of cases, eighty per cent of the reactions will be given by less than two dozen of our commoner foods and hair or feather dusts. The most important foods are eggs, milk, and wheat. These three foods give more reactions than all other foods. Of the animal emanations, horse, dog, cat or rabbit hair, and feathers of the chicken, duck and goose, are the main offenders. The pollens vary according to the locality. June grass, timothy, and ragweed are the most troublesome. Practitioners will find the following list of thirty valuable—whole egg, cow's milk, wheat, oats, potato, cabbage, lettuce, beans, tomato, orange, peanut, beef, mutton, chicken, salmon, herring, codfish, cocoa, horse, dog, cat and rabbit hair, chicken, duck and goose feathers, orris root, June grass, timothy, ragweed low and tall, with sagebrush added for the western provinces.

If one wishes to employ a very complete list he may add the following forty-seven to the above list—sub-proteins of egg, ovomucoid, ovo-vitelline, egg white, egg yolk, sub-proteins of cow's milk, casein, lactalbumen, peptone, and proteose, sub-proteins of wheat, leucosin, gliadin, glutenin, globulin, and proteose, beet, tea, celery, cauliflower, rice, veal, pork, white-fish, lobster, apple, banana, pear, walnut, paprika, mustard, mayonnaise, cow hair, muskrat, fox, cottonseed, flax, sheep's wool, glue, tobacco. Pollens will vary according to locality, but the most frequent reactions will occur with willow, maple, red top, orchard grass, rye grass, dandelion, marsh elder, cocklebur and wormwood. When using a very extensive list of 275, less than one per cent of the reactions of any importance will occur outside of the above list.

If a patient complains that house dust will cause attacks, enough of the floor sweepings to fill a thimble may be dissolved in twice its volume of one-tenth normal sodium hydroxide, and after allowing several hours to effect solution, shaking, and then centrifuging, the supernatant fluid may be applied to a scratch. If a reaction occurs and it is impossible by means of vacuum cleaners,

etc., to keep the patient away from house dust, any biological laboratory will prepare suitable sterile extracts for treatment from a sample of the dust.

From the standpoint of diagnosis and treatment cutaneous protein tests are useful in children and young adults. They rarely give information in patients past middle life and autogenous vaccines should be the mainstay of treatment. In the past, many attacks of asthma in babies were diagnosed as croup and bronchitis. Where asthma is present there is frequently a concomitant eczema. These conditions, while fundamentally inborn, are very much aggravated by certain proteins, principally those in the food, though house dust may at times be a cause.

If a nursing baby be sensitive to a protein such as egg-white, its asthma will be aggravated by eggs in the diet of the mother. Although infants suffering from eczema and asthma usually show cutaneous reactions to egg and milk and other food proteins, they do not always improve when their diet is adjusted to avoid the substances. In these who are hypersensitive to foodstuffs, the reactions to hair and feathers frequently develop later. The many very strong reactions to horse hair are difficult to explain from the standpoint of previous exposure to that substance. Only three out of four babies will show any reaction to an extensive list of more than one hundred proteins. Hypersensitiveness to proteins and the cutaneous reactions frequently disappears spontaneously at about the age of three years. The reactions sometimes vary from month to month. Among those who show reactions, an acute bronchitis, such as occurs in the winter months, frequently initiates the attacks.

Protein reactions in infants may frequently be determined by a careful history. A child usually vomits shortly after taking food to which it is very hypersensitive, or it may break out in a rash twenty-four hours after taking such a food. However, where small amounts are taken, or where the food is a daily one, such as bread and milk, and the parents not very observant, it is well to test for and exclude from the diet all food to which the child is hypersensitive, and to keep it from contact with hairs, feathers or dusts which give reactions.

Do not think that protein-sensitization, diagnosis and treatment are the beginning and the end in the management of asthma. This phenomenon has been investigated by modern methods only within the last ten to fifteen years. It is, there-

fore, relatively new. As with everything new, the reports of results have been too optimistic. The protein-sensitization test has, however, established a definite place for itself in the diagnosis of asthma. It may be used to confirm the truth of the statement from a patient that eating a certain food, or contact with a certain dust, will produce an attack. More frequently, substances that the patient did not suspect will be demonstrated as an exciting cause. The effect may be proved by actual contact later.

The following is a case in which cutaneous reactions and desensitization proved valuable.

CASE 2

H. R., a female, 29 years old, referred by Dr. F. A. Benner, had had asthma for the past twenty years. Until the age of eighteen years she had lived at Maple Creek, Sask., a settlement with a high and dry location. After that she lived for ten years in Edmonton, and had been in Winnipeg less than a year. She was almost a chronic invalid, having very severe asthmatic attacks daily, and only through remarkable will power and four or five daily hypodermic injections of adrenalin was she able to continue her work as a stenographer. Having an acute perception, she was able to state definitely that horses, dogs and cats make her break out in nettle stings and make her asthma worse. Sage brush which pollinates in the fall, would also aggravate it. She was given a course of desensitization to horse and dog hair for over four months. She did not improve for the first two months, but after that the attacks became less severe, until by the end of the treatment she was almost entirely free from symptoms. Only by a brisk walk against a cold wind could she start up a wheeze. After six months she began

to notice a slight return of the asthma on hot days. The protein tests now showed the reactions shown in Fig. 1. They were twice this size before the course in desensitization. On account of the horsehair reaction now being so much larger than the others it was used in combination with sagebrush pollen for a second course in desensitization. This should give an added period of freedom from asthma, but it is impossible to forecast whether or not this patient will be free from asthma in old age.

DESENSITIZATION

Before undertaking a course in desensitization every effort should be made to keep the patient away from food or substances which cause his symptoms. The physician should give the patient explicit instructions and, if this does not result favourably, he should visit the patient's home in the rôle of a Sherlock Holmes to ferret out materials which might be a cause. If this is successful, even occasionally, it repays many unfruitful efforts. Desensitization is time consuming, it is not a pleasant procedure for the patient, and it involves considerable expense. However, desensitization may be the only way out, as when the offending substance is ubiquitous and likely to meet the patient in many places he cannot avoid. It is justifiable to desensitize a farmer to horsehair emanations if he cannot engage in any other occupation. The aim in desensitization is to establish a tolerance by means of gradually increasing doses of a substance to which the patient is hypersensitive. In patients who are markedly hypersensitive, especially to the animal emanations, desensitization is very slow and never complete. A partial desensitization, however, will permit a patient to come in contact with small amounts of the offending substance, without developing symptoms. If hypersensitive to horses such a patient may drive behind them, though he cannot groom them. A year after desensitizing some tend to become as hypersensitive as they were originally. The patients with large reactions manifest the best results from desensitization. Patients who show wheals less than an eighth of an inch in diameter frequently do not benefit from such treatment. From multiple reactions the largest of each group should be combined for desensitization treatment. The directions given by the biological houses with desensitizing protein solutions are satisfactory, but it is frequently necessary to continue for some time with larger doses than advised of the stronger solutions, in order that sufficient tolerance may be developed. One minim of a 1-10,000 solution of the protein is the usual dose with which to commence treatment, but it is best to put a drop of the 1-10,000 solution in a scratch, and, if the

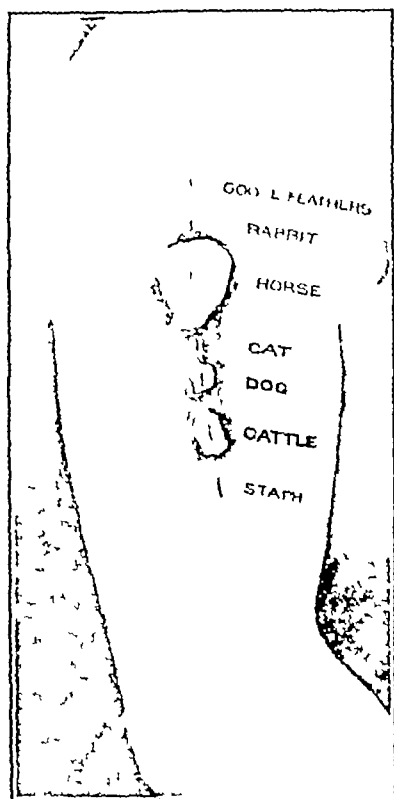


FIG. 1.—Cutaneous protein reactions following four months of desensitization in patient No. 2. They were twice this size before the course of injections.

wheal is more than $\frac{1}{8}$ inch wide, to give one tenth of the dose by diluting the 1-10,000 solution

For the first half dozen doses, each may be twice the previous one. Later it is best to increase in slower steps by having each dose one and one-half times that of the previous one. *One cardinal principle is that the injections should not be so large that they give the patient asthma.* If the symptoms are worse within six hours after the injection the dose is too large and should be decreased to half the last given and increased at half the rate suggested above. The local reaction should not be over three inches in diameter and it should start to fade in six hours. Walker originally gave injections at weekly intervals, but Duke has recently obtained good results using only a daily interval. Three injections weekly at first and later twice weekly are satisfactory.

The course of injections should be continued for two to three months or until the patient can tolerate one c.c. of a one per cent solution. This may require a long time, especially in a patient who is very sensitive to animal hair. Following this one may continue with monthly injections of the last dose for a period of one year or repeat the course if the symptoms recur, which is frequently the case in a year or two.

We do not know what the remote results of desensitization may be. Only after it has been in use for a lifetime can we determine whether the treatment in childhood tends to prevent asthma in old age.

Drugs do not interfere with desensitization, so that one may give ephedrine or adrenalin for immediate relief. Ephedrine is always worth a trial in a patient who is protein-sensitive. It rarely gives relief to elderly patients who have a continuous type of asthma. It can be taken by mouth and its action is more prolonged but less certain than that of adrenalin.

A change of climate, always an expensive experiment, does not benefit protein-sensitive patients if they are exposed in their new locality to the protein to which they are susceptible. A change of residence to a new house a hundred yards away or to a sparsely furnished hospital room will remove the patient from the source of trouble and often give as much relief as a haphazard journey of a thousand miles.

About 60 per cent of asthmatic patients from 3 to 35 years of age show protein reactions. One can, by a history, frequently distinguish patients who are protein sensitive from those who are not.

Those protein sensitive have little or no purulent bronchitis. They have definite attacks, lasting several hours to several days, and then definite remissions, when they are entirely well. The attacks are usually associated with a definite location or occupation and the onset is characterized by sneezing. The non-sensitive types have a more continuous asthma. The onset is usually from two to five in the morning. Patients hypersensitive to feathers usually develop attacks within an hour after going to bed. The non-sensitive are usually past middle life and are very much worse during an attack of acute bronchitis. Many elderly patients who show no reactions give a very distinct history of being, in their youth, hypersensitive to specific substances such as horsehair.

Out of three patients showing the protein reactions one will obtain no relief from his asthma by abstaining from the substance to which he is hypersensitive or by a course in desensitization. Another will have a stubborn respiratory infection and there is little relief by desensitization. The third will have marked relief by desensitization for a period varying from one to three years and a repeated course of injections will frequently extend this period. This is the type of case that encourages one to do protein tests and desensitization. The patient not showing any definite protein reaction should be treated in the same manner as asthma in the elderly.

Asthma in old age is the least hopeful of all types. It is usually continuous and associated with a bronchitis which is worse in winter. Cardiac, renal and aortic dyspnoea (so-called asthma) should be excluded by careful physical examination.

CASE 3

D. M., 58 years of age, is a good example of this type. He entered the General Hospital, under the care of Dr. E. S. Moorhead, complaining of weakness, asthma, cough and expectoration. This patient had been suffering from asthma for twenty-four years. He came to Canada from Scotland, eighteen years ago in search of health. He has not yet found it. He had had asthmatic attacks two or three times a week during all these years. For the past four years the attacks had been more frequent, until they came on whenever he exerted himself, even moderately. Since 1922 he had frequently coughed up small amounts of blood in the morning, and for the last year his sputum had been more than six ounces daily, of thick yellowish material. He had had considerable pain in his right side, aggravated by coughing and deep inspiration, and had lost so much weight that he appeared to be quite wasted. His chest was prominent with the right shoulder lower than the left. There was considerable bowing of the spine both posteriorly and to the left and examination of the lungs showed relative dullness due to old tuberculosis in the right apex and marked active pyogenic disease at the base. The bronchus was pulled to the right and lipiodol did not penetrate the base of the lung but floated

ported, the typical Pel-Ebstein type of temperature was the feature that made us strongly suspect the disease. However, in the ambulatory and intermittent types, the Pel-Ebstein type of temperature is not present, there may be only slight fever, or it may be intermittent with varied clinical findings, such as arthritis, neuritis and phlebitis. The diagnosis must, of course, finally rest with either a positive blood culture of the *Brucella abortus* or positive agglutination tests with that organism. Agglutination at high dilutions has been insisted on by many observers in America. However, Sensenich and Giordano believe agglutination in a dilution of 1:50 to be diagnostic.

The cases here reported are of interest because they are among the first fully reported, which have occurred in Canada. Also, one patient (Case 1) had an illness lasting ten months, and was in various hospitals in Canada, and under treatment for various diseases before the true nature of his disease was discovered. Another reason for reporting these cases, with a brief outline of *Brucella abortus* infection in man, is that we believe the infection in Canada to be more common than is suspected. If attention is drawn to the possibilities of the disease, and laboratory facilities are available for the agglutination of the blood, many more cases will be diagnosed.

CASE 1

A man (B. R.), aged 22 years, born in Italy, had been in Canada for one year. He was first seen by one of us (I. S.) on April 22, 1928, when he stated that he had been sick for eight months. There was nothing in his history prior to September, 1927, which appeared relevant. He had had no illnesses while in Italy, and was well for a period of months after coming to Canada.

It was rather difficult to obtain an accurate history but the patient said he had been sick for eight months with a fever, and profuse perspiration, loss of strength, cough with sputum, and slight, vague aches in his joints. During these eight months, from September until April, he had consulted many physicians and had been in one hospital for two months, with a diagnosis of typhoid fever, with four relapses. He had occasional rigors during the eight months. The things which bothered him most were the periods of high temperature associated with very profuse perspiration, some loss of appetite and the pains in his joints. However, he did not consider himself very ill and had been up and around for the greater part of his illness. It was impossible to obtain any further history except that a physician would visit him when he was feeling sick and find a temperature of 104 degrees, upon his return next day he would be surprised to find a normal temperature.

Physical Examination—On April 22, 1928, the patient first presented himself for examination. He was thin, with flushed face and did not appear to be very ill. Temperature 103°, pulse 80. There was diminished resonance at the left apex with increased bronchophony and broncho-vesicular breathing. No râles were heard.

The liver was not enlarged, the spleen appeared to reach one finger's breadth below the costal margin and was not tender. The examination was otherwise entirely negative. There were no glandular enlargements, no petechiae nor rose spots, no apparent disease of the joints or peripheral nerves.

Laboratory Examination—Urine normal. No pus present. Sputum was negative for tubercle bacilli. Blood: white blood cells 6,000 per cmm, red blood cells 3,800,000 per cmm, hæmoglobin 80 per cent (Sahli). The smear showed a moderate secondary anaemia. Differential count: polymorphonuclears 40 per cent, lymphocytes 54 per cent, monocytes 6 per cent.

X Ray Examination—Fluoroscopic examination was made and showed the mediastinum to be clear. Stereoscopic plates were made of the chest, which showed a minimal parenchymatous tuberculous infiltration at the left apex, with thickening of the ascending bronchus on the right.

A tentative diagnosis of tuberculosis was made but the patient was sent to hospital for observation, as we were unable to ascribe an eight months' illness, with high fever, to such a small area of tuberculous involvement which moreover, showed no signs of activity.

Progress—For the first week of his stay in the hospital the patient showed marked remissions in temperature, from 104 to 99 degrees in an hour. At the time of the drop in temperature, the patient experienced the most profound perspiration. He did not appear to be very ill and complained of nothing but the drizzling sweats, slight loss of appetite and cough with sputum.

Physical examination during this week showed no change from the initial examination, except that there appeared a few medium moist râles throughout the lungs. Repeated urinalyses were negative, as also were repeated sputum examinations for tubercle bacilli. White blood counts, taken during this week at various temperature peaks, showed a constant leucopenia, about 6,000, with a relative lymphocytosis. The blood smears were searched for malaria parasites and the spirochetes of relapsing fever, but none were found. The Widal test, by the macroscopic method, showed no agglutination to typhoid or paratyphoid.

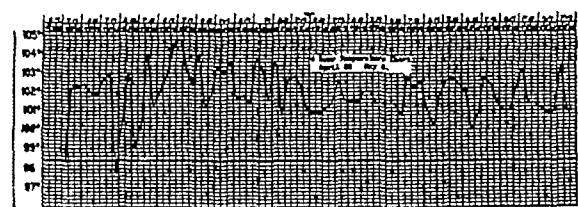
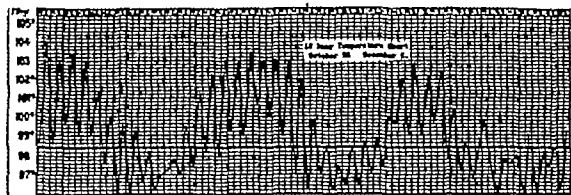
May 1st to 14th—The patient remained much the same, except that the temperature did not go so high and there were no marked remissions. The temperature curve did not show any undulating character, however, he had a fever from 100 to 102 degrees every day. A mild phlebitis developed in the right leg, which cleared up in four or five days. Later, he developed a painful swollen elbow, which was not red. The pain and swelling disappeared in about three days.

All attempts to find a cause for his temperature were unsuccessful. Intravenous neosol was given as a therapeutic test for relapsing fever. The arsenic failed to influence the course of the disease, so that we felt safe in ruling out relapsing fever as a possible cause of his illness. There were no signs of activity in the minimal tuberculosis present. A subcutaneous tuberculin injection gave a marked local but gave no systemic or focal reaction.

May 14th to June 1st—About May 14th, we received, through the kindness of the hospital in which the patient had spent the months of November and December, 1927, his temperature chart and clinical record. The temperature chart was striking in that it showed a typical undulant or Pel-Ebstein type of temperature. During the eight weeks he was in that hospital, every alternate week he had a fever to 103-104 degrees, with daily remissions to 100. The weeks between these weeks of pyrexia, he was afebrile. The accompanying temperature charts show the curve at the two periods of his illness. He was discharged, in one of his afebrile weeks, as cured of typhoid fever with four relapses. No Widal test was done and he probably continued to have febrile and afebrile periods after discharge from hospital. The disease was clearly not

typhoid and our Widal test being negative, one was justified in ruling it out as the cause of his illness

The Pel-Ebstein temperature curve could be produced by a granuloma (Hodgkin's disease), *Brucella abortus* infection, or, very improbably, tuberculosis. No evidence of the enlarged glands of Hodgkin's disease was found, and they, therefore, must be abdominal if present. The differential count, with no increase in



endothelial cells, was against Hodgkin's disease. Through the kindness of the Connaught Laboratories, University of Toronto, we were able to have agglutination tests done with *Brucella abortus* and *Brucella melitensis*. Positive agglutination with *abortus* 1200 and with *melitensis* 180 were reported. A positive diagnosis of *Brucella abortus* infection was then made.

The patient's temperature reached normal about June 1st, his appetite improved and he was discharged from hospital. Stereoscopic plates of his chest were taken again, and the minimal tuberculosis was found unchanged as compared with the previous plates. The blood Wassermann test was negative. Blood examination on discharge was similar to that taken at time of admission, except for a slight increase in the anaemia. Blood white blood cells 6,000, red blood cells 3,500,000, haemoglobin 75 per cent (Sahl). Smear polymorphonuclears 48 per cent, lymphocytes 43 per cent, monocytes 9 per cent.

Further agglutination tests done by the Connaught Laboratories gave an agglutination of 1200 with *Br. abortus*. Blood sent to this laboratory for culture showed the presence of *Br. abortus*.

This case is a mild, undulant type of *Brucella abortus* infection in man, proved by positive blood culture and agglutination tests. The patient was at no time very ill, yet he was incapacitated for about ten months. The outstanding clinical points were that the patient looked so well when he had a high fever, the presence of drenching sweats, the Pel-Ebstein temperature curve, the marked remissions in temperature from 104 to 99 degrees in a few minutes, the presence of mild phlebitis and arthritis and the constant leucopenia, with a relative lymphocytosis. One can easily understand why such a case could remain undiagnosed, particularly, if the patient was not observed during the period when his temperature showed

the Pel-Ebstein or undulant type of temperature curve.

The patient, though he came from Italy, had no illness while there, and there was a period of months after he arrived in Canada before this disease began. We, probably, are justified in saying that he became infected in Canada from unpasteurized milk. The actual source of his infection was not traced.

CASE 2

Mrs F, aged 52 years, she came to this country from Italy, sixteen years ago. There was no history of any illnesses in Italy. Her past sicknesses included typhoid fever in 1923, which from details obtained was, probably, correctly diagnosed. No other members of her family were ill.

She was first seen June 1, 1928, complaining of feeling feverish, with headache and profuse perspiration. She had a slight cough with sputum. On questioning her regarding her illness, she was in good health, apparently, until January 1, 1928, when she had a severe chill with fever. She then volunteered the information that since January she had been sick every alternate week with a fever, headache, and general malaise, one week she would be so sick that she would have to stay in bed, the next week she would feel well and be able to do her housework. These alternating periods of ill health with fever and feeling of good health without fever lasted from five to seven days each and had persisted regularly since January. During her five months' illness, January to June, she had had slight, vague aches in her back and legs. No painful or swollen joints, and no phlebitis were noted. She had lost very little weight and did not consider herself very ill, except that she could not understand why she should be sick, so regularly, every alternate week.

Physical Examination—The patient did not appear to be ill. The chest examination was negative, except that the heart was enlarged 10 cm to left in the 5th interspace, no murmurs. The blood vessels were slightly sclerosed. Blood pressure, 50/90. In the abdomen nothing was abnormal, the spleen was not palpable, the liver, not enlarged. The joints, peripheral nerves, and glands were apparently normal. Temperature 104°, pulse 90. Blood white blood cells 5,000, red blood cells 4,000,000, haemoglobin 80 per cent. Differential count polymorphonuclears 69 per cent, lymphocytes 23 per cent, monocytes 6 per cent. A catheter specimen of the urine contained a trace of albumen, an occasional pus cell, and granular casts.

A provisional diagnosis of *Brucella abortus* infection was made, and blood was sent to the Ontario Laboratory, Toronto, for agglutination. The blood showed positive agglutination in 1320 with *Br. abortus* and in 1160 with *Br. melitensis*.

Progress—During the time the patient has been under observation, since June 1st, she has had one period of six days with continuous fever, with daily variations from 104 degrees to 100 degrees. This was followed by a week with no fever and no symptoms. The following six days she again ran a daily fever, to 103 degrees with remissions to 100 degrees. Since then, for two weeks, she has remained afebrile and without symptoms. A constant leucopenia was present, but without relative lymphocytosis.

This case has many points of difference from Case 1. The patient was never very ill, and during her afebrile periods she was symptomless. She greatly aided in the diagnosis by remarking

that every second week she was ill with a fever. Unfortunately, temperature charts were not available, as she was not ill enough to have nurses or to go to hospital, but from the history and the occasional temperature records obtained she, undoubtedly, would have shown a typical Pel-Ebstein temperature curve. The mild nature of the infection, probably, accounts for this case going undiagnosed for five months, although on only two or three occasions did she think it necessary to consult a physician. She stated that the only milk she had used for years was pasteurized milk from a local dairy. It was impossible to ascertain the source of her infection.

CONCLUSION

In June, 1925, five cases in human beings of *Brucella abortus* infection, occurring in Canada, were reported as preliminary reports. The cases cited here, the first to be reported in detail, make a total of seven. It is highly probable that many more have gone undiagnosed.

The Board of Health, by making it possible to have agglutination tests for *Brucella abortus*

done on specimens of blood showing a negative Widal, can greatly help in the detection of more human beings suffering from this infection.

The varied symptomatology and the clinical course of the infection in man have undoubtedly, caused many cases to go undiagnosed. It is even possible that the organism in a primary focus may cause secondary lesions in the joints and nerves, without marked evidence of a generalized infection. This is suggested in the finding, by Carpenter, of *Brucella abortus* in seven out of fifty-five pairs of human tonsils, cultured after removal.

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AURICULAR FLUTTER RESTORED TO NORMAL RHYTHM BY QUINIDINE*

WITH THE REPORT OF A CASE

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THE interest in this report lies in the type of disturbance of cardiac mechanism and the method of its restoration to normal.

CASE REPORT

The patient, aged 38, was a private in the 22nd Regiment during the war. Since demobilization he has worked as a plasterer.

Personal History—No definite history of rheumatism nor lues, prior to the present illness he had had repeated attacks of sore throat. About two and a half years ago he had to stop work on account of dyspnoea, oppression in the chest, and cough. After a fortnight's rest, at home, he was able to return to work, but was soon laid up again. Alternate periods of rest and work followed for two years and a half,

until admission to hospital under Drs. C. A. Peters and D. G. Campbell, on December 22, 1927.

Complaints—Breathlessness, precordial pain, cough and oedema of the legs of moderate degree.

Present Condition—He also showed arrhythmia and a soft apical systolic murmur, with a few crepitations at the bases, but no gross heart failure. The Wassermann reaction was negative.

When at rest the ventricular rhythm was either regular, at about 75 per minute, or irregular, between 75 and 110. With exercise or excitement the rhythm became regular, at the rate of 150, but soon became irregular and slowed with rest. As the pulse slowed after this acceleration, the intervals seemed to bear a mathematical relation to one another. They lacked the gross irregularity frequently found in fibrillation of the auricles. A series of rapid

* From the service of Dr. A. H. Gordon, Montreal General Hospital.

regular beats would be followed by others, once and a half or twice as long, and this same phase of irregularity was frequently repeated. When the patient was at rest and the pulse slow, regular undulations could be detected in the jugulars, occurring about four times as fast as the ventricular rate.

The peculiarity of the irregularity, and these cervical undulations, were suggestive of auricular flutter, and an electrocardiogram definitely established the diagnosis.

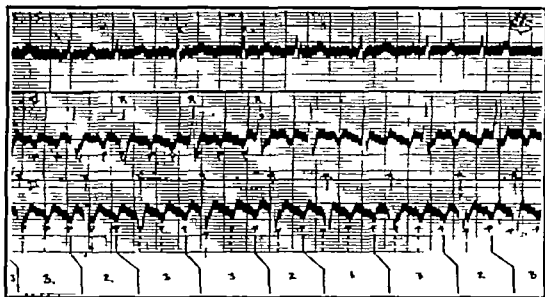


FIG 1—Electrocardiogram showing flutter of the auricles, on admission, December 22, 1927. Leads II and III show rapid waves marked "P" representing the "circus movement" of the auricle at the rate of 288 per minute. Every second or third "P" wave gives rise to a ventricular deflection (R) as shown by the black lines below. The other "P" waves, marked with dotted lines, are "blocked" and do not reach the ventricle. Note the sequence of intervals 233233, such an arrangement is characteristic of flutter.

TREATMENT

He was kept in bed and tincture of digitalis was given for six weeks after admission, the result was slower and more efficient ventricular action, and a more comfortable patient, though flutter still remained, the auricular rate remaining about 300 per minute. During the latter weeks he was able to be up about the ward for a portion of the day. Four and one-half ounces of the tincture were given, in all.

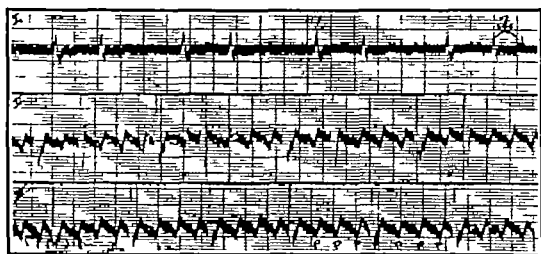


FIG 2—After five days' rest in bed on tr digitalis m 10, t.i.d. Patient much more comfortable, though the ventricular rate is unchanged. The auricles are beating more rapidly (320 per min.), the vagal being the predominant effect of the digitalis. Note the alternation of 2:1 and 4:1, response of ventricle to auricle in the leads I and II. This sequence was heard at the heart.

and felt at the radial, and is characteristic of flutter of the auricles. The regular 4:1 response in lead III is frequently seen when a flutter patient is at rest. The absence of "P" waves in lead I, (transverse) is due to the relation of the "circus movement" to this lead and is not uncommon in flutter.

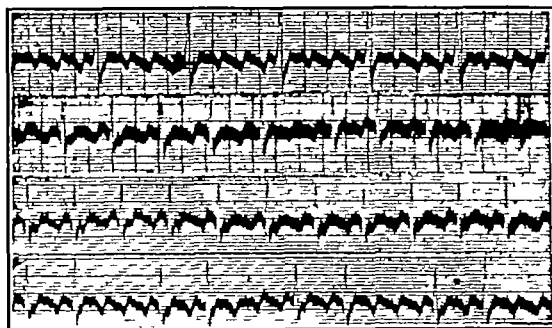


FIG 3—The upper line is taken at rest in bed after six weeks of tr digitalis ($4\frac{1}{2}$ ounces). The ventricle is regular and more efficient and slowed to 75 per min. The auricular rate remains at 300 (4:1 response). The second and third lines show the effect of moderate exercise, with the abrupt doubling of the ventricular rate to 150 per min but no change in the auricle (2:1 response). The effect of exercise soon ceases and the fourth line, taken within two minutes, shows the effect of rest, with a slower ventricle, alternating as in Fig 2. Shortly afterward the rhythm returned to that seen in the upper line. This effort response is typical of flutter of the auricles.

Quinidine was started several weeks after entering hospital, a preliminary dose of two grains of the sulphate and then four grains every four hours. Almost immediately the auricular rate was slowed by one-sixth. The drug was well borne. The patient was kept in bed throughout this treatment. The drug was increased to six grains every four hours and when 226 gr had been given the auricular rate was 180, which was probably slower than it had been in more than two and a half years. The ventricle, however, was beating at 90, which was not so slow as under digitalis. The dosage was increased to 8 gr every 4 hours (32 gr a day),

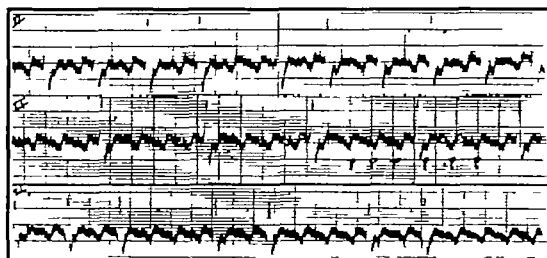


FIG 4—Quinidine sulphate therapy, February 14, 1928. Preliminary dose of 2 gr and then three 4 gr doses at 4 hour intervals. Tracing shows immediate slowing of auricular rate (P) to 252. In the middle line there is a regular 4:1 flutter, with the ventricle beating at 63, but irregularity is more usual with quinidine, as shown in the upper and lower lines.

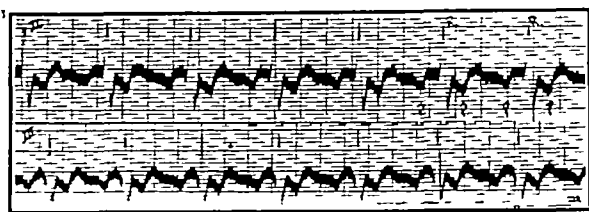


FIG 5—After 8 days of quinidine, gr vi, q 4 h (Total 225 gr) Flutter 2:1 The auricle is slowed to 180 per min, the slowest of the series, the ventricle is now more rapid (90) than when under digitalis

and this dosage was continued for five days up to a total of 500 gr The patient had only a slight headache with little, if any, nausea, and a slight icteroid tint The toxic effect of the drug became evident in the tracing (see Fig 6) and drugs were stopped for a short period



FIG 6—February 28, 1928 After 500 gr of quinidine, gr 8 q 4 h, latterly Auricular rate 200, ventricular rate 90 Aberrant ventricular beats (xx) indicate the toxic effect of the quinidine

Combined digitalis and quinidine therapy in large doses, one dram, and 8 gr, respectively, every 4 hours, was tried, but soon stopped on account of nausea, and smaller doses of 10 minims and 4 gr were borne for two days only, when headache, nausea and anorexia led to stoppage of this regime

After a two-days' rest from all drugs, another course of quinidine was started on March 16th, with 4 gr, q 4 h, for a few doses and then 6 gr, q 4 h Three days after starting this course normal rhythm was restored, with a total dosage of 750 gr of quinidine (500 gr in the first course, 100 gr, combined with digitalis in the second course, and 150 gr in the last and successful course) The patient remained in bed in the ward for five weeks, with gradually decreasing dosage of quinidine, until 4 gr three daily were given, and he is still receiving this amount

Dr A H Gordon made the following note on the patient's condition "On the day following restoration to normal rhythm the external jugulars were much distended and pulsating with a systolic rhythm Each vein was the size of a thumb At the same time pulsation in the liver was demonstrated, but this was regarded

as cardiac systolic ventricular pulsation, communicated A systolic apical and substernal murmur was noted Patient had no distress This jugular pulsation gradually diminished and before discharge was scarcely recognizable "

On discharge the patient stated that he felt more comfortable than for several years X-ray demonstrated cardiac enlargement to the right and left The diagnosis was mitral endocarditis, auricular flutter, cardiac decompensation and tricuspid regurgitation

He was advised to lead a sedentary life in the open air for six months at least, and to continue taking 4 gr of quinidine three times a day during this period Two months later he reported at the cardiac clinic at the Montreal General Hospital There was no distress He had followed the regime advised The pulse was regular and the rate 72, and the tracing was normal

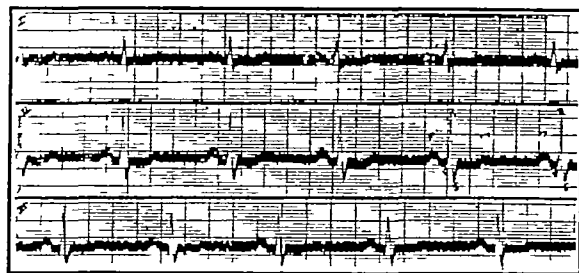


FIG 7—Normal Rhythm, March 19, 1928, after two courses of quinidine, of approximately 500 and 250 gr (total 750 gr) The patient was taking gr 6, q 4 h., when offset from flutter resulted in return to normal mechanism

DISCUSSION

In auricular flutter¹ the normal cardiac mechanism is wholly in abeyance Regular contraction waves travel clockwise, in a ring of auricular muscle around the venæ cavæ The wave completes the same circuit over and over again in this ring, supplying the impulse to the remaining auricular tissue at each of these "circuit movements" The conditions favourable to the establishing of circuit movements are, (a) a large ring of muscle involved, (b) a slow rate of conduction, and (c) a short refractory period

The ventricle beats at a slower rate, usually one-half, though, as a rule, in response to the auricle Acceleration and heart-block are combined, therefore Flutter may occur in short paroxysms but is more frequently persistent, lasting for months or years when untreated It is closely related to fibrillation² of the auricles

and often becomes changed into it. Experimentally, flutter may be produced,³ at times, by repeated stimulation of the auricle by rapid and rhythmic shocks. Clinically, it may be associated with rheumatic heart disease, influenza or other infections, lues and infections of the urinary tract, arteriosclerosis, coronary sclerosis and hyperthyroidism. Though seen for the most part in elderly subjects, it is also met with in quite young children and in adults of all ages.

A regular tachycardia with a fixed rate between 120 and 160 per minute which persists for over a fortnight, is almost certainly flutter. Where flutter is continuous, the symptoms vary according to the ventricular rate and the state of the heart muscle. In many patients there is little disturbance, in these the ventricular action is slow and the muscle relatively strong. In others, when the ventricle is rapid there is dilatation of the heart, cyanosis, venous engorgement, enlargement of the liver and dropsy. The importance of flutter, clinically, lies in the rate engendered in the ventricle.

The influence on life is indefinite, though its persistence for eight years has been recorded, with the ventricle beating continuously at 150. The first case studied by Lewis "fluttered" from 1914 to 1926.⁴ Severe congestive failure was relieved by digitalis in the first month of treatment, but drug treatment was refused after this time, and the patient was able to be about and had no further gross congestive failure. Speaking generally, the most important guide to prognosis before treatment is the degree of tolerance shown to flutter, i.e., whether or not it rapidly induces congestion or heart failure. Response to treatment itself greatly influences prognosis. A useful existence is seldom possible, unless a normal rhythm is restored and maintained. Flutter, persisting in spite of treatment, induces great incapacity and high mortality.

Digitalis alone restores flutter to normal rhythm in one-third of the cases, and in another third it induces fibrillation. Withdrawal of the drug may then give a normal rhythm. Flutter may return and require a further course of digitalis. Digitalis slows and strengthens the ventricle, and may be pushed until the ventricular rate reaches sixty or even fifty.

Quinidine acts by lengthening the refractory period. It also slows conduction. The normal rhythm can be restored in flutter only by closure of the gap between the crest and wake of the oncoming wave. Success probably occurs only when the effect on the refractory period predominates. Quinidine converts established flutter to normal rhythm in 20 per cent of cases. Where digitalis has left the auricles fibrillating, quinidine may convert them to normal. An undesirable rapidity of the ventricular rate is an occasional accompaniment of quinidine therapy. Quinidine is contra-indicated with a history of hæmoptysis, venous engorgement, or with much enlargement of the heart.

It is stated that intramural thrombi may be formed during long paroxysms of flutter, and then expelled on the return to normal auricular activity under quinidine. In our case the period of flutter had exceeded two years and quinidine caused none of these untoward results. It would seem wise, however, to recognize this danger by confining to bed any patient under active "cinchonization."

SUMMARY AND CONCLUSION

1 In a young subject under forty years of age with established flutter and a heart definitely enlarged, but without gross cardiac failure, there was a marked tolerance to quinidine, and massive dosage (750 gr.) restored the normal mechanism of the heart beat.

2 Digitalis improved the ventricular action but apparently deserves little, if any, credit for the offset of flutter.

3 Combined digitalis and quinidine therapy was poorly borne.

4 In a person under forty, with a heart relatively healthy, normal rhythm is so desirable that quinidine should be tried first, but in other cases foxglove should have first choice.

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INJECTION OF AIR BY THE LUMBAR ROUTE IN DIAGNOSIS AND TREATMENT*

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WE recognize in roentgenology a valuable aid in the diagnosis of certain neurological conditions. By this means we can detect changes in the sella turcica due to intra- or supra-sellar pressure, changes in the suture markings due to increased intracranial tension, and injury or disease of the bones of the skull and vertebral column. Our difficulty has been, however, that the structures within this osseous cavity are of such uniform density or opacity that their various parts cannot be differentiated and lesions cannot be demonstrated. Rarely does a brain tumour become manifest on x-ray examination and, when it does, it is because of calcified areas which it contains, or because of its encroachment upon and involvement of the bony structures, or its obliteration of the air spaces in the nasal accessory sinuses.

Within the past decade attempts have been made to overcome this difficulty by injecting into the spinal fluid circulation, or by substituting for the spinal fluid, substances which will cast a shadow different from that of the intracranial and intra-vertebral contents themselves, and consequently will show distortions or other abnormalities of the spaces normally occupied by spinal fluid. We will dismiss with a word the first of these methods. In 1921 LaFay originated the iodine-containing vegetable compound lipiodol. In the same year Sicard and Forestier, finding that this was opaque to the roentgen rays and non-irritating, injected it into the lumbar sub-arachnoid space and by this means demonstrated a spinal cord compression. Since that time it has been widely used, and cases have been shown here in Montreal, by Russel and others, of cord tumours localized by this means. The lipiodol is injected into the cisterna magna and pictures taken with the patient in the upright position, or into the lumbar space, in which case the patient is turned upside down.

HISTORY

It was Dandy who first tried replacing the spinal fluid, and the medium which he used was air. In studying some cases of hydrocephalus in infants he found that by puncturing the ventricles, withdrawing the spinal fluid, and injecting air, he could get very good and extremely valuable pictures of the ventricular system. Often, by this means, he was able to determine the point of obstruction in patients with obstructive hydrocephalus. Desiring similar outlines of the basilar and pontine cisterns, he next tried injecting the air by the lumbar route. He came to the conclusion that of the two methods the latter was the more dangerous, and so it was given up for several years on this continent. He called the first of these operations "ventriculography" and the second "encephalography." In Europe however the procedure was carried on with greater enthusiasm, notably by Bingel and Wideroe. Several authors reported upon it and many cases were described without a fatality. In 1922, Schoot and Eitel drew attention to some of the ill effects which might follow encephalography. They noticed nausea and vomiting, pallor, sweating, shock, and sometimes fever, and an intense desire to defæcate. Since then the literature has been accumulating, both in Europe and, more recently, in America.

While encephalography was for some time in dispute in the new world, ventriculography at once took its place in the diagnostic methods of the neurological surgeon. Grant, in an excellent critical review in 1925, discussed the two methods and analyzed the results in 392 collected cases of ventriculography. He concluded that the condition in which an injection is most desired is brain tumour, especially if localization is difficult by other means. But it is just in these cases, cases with increased intracranial pressure, that encephalography is dangerous and contra-indicated. He admits the

* Presented to the Neuro Psychiatric Society of Montreal, April 4, 1928.

possibility of getting good photographic results in other conditions, but these are not amenable to treatment. His analysis yielded interesting data in regard to ventriculography. In his series positive information as to the position of the tumour was obtained in roughly 80 per cent of the cases. In 30 per cent of these all other evidence as to the location of the neoplasm was lacking. Of the 93 cases thus localized by ventriculography, in the absence of neurological evidence, 44, or nearly 50 per cent, of the growths could be removed by surgery. Less than 1 per cent of the operations were performed uselessly owing to misinterpretations of the air shadows. The mortality rate is high, more than 8 per cent, but less of course than that of unextirpated brain tumours.

In the last few years greater enthusiasm has been exhibited in encephalography on this continent. Martin and Uhler reported a series of 14 cases without a fatality. Carpenter has published a report of 40 cases. Waggoner presented a series of 10 before the Philadelphia Neurological Society, and Friedman and Kasanin reported 45 cases at the 1927 annual meeting of the American Neurological Society. Their series included a child of six months. At this meeting comment was in favour of the procedure. All are agreed that, when properly carried out on selected cases, it is practically devoid of serious results.

TECHNIQUE

Several methods of removing the spinal fluid and injecting air have been described. I have used that outlined by Waggoner. Carpenter advises that the interchange be carried out with the patient under ether-anæsthesia, but most workers use nothing apart from the local anæsthetic injected before the lumbar puncture needle is inserted. Before leaving the ward for the x-ray room the patient is given morphine gr 1/4 and atropine gr 1/150 or less, according to age and weight. When he reaches the x-ray room he is prepared, and an ordinary lumbar puncture is done, in the sitting position. The needle is inserted in the third lumbar interspace. The head of the patient should not be flexed too much, as this prevents the proper diffusion of the air. It is well to have the nurse stand in front of and close to the patient in case he needs support, perhaps

for mutual support, for although I have seen the nurse faint dead away I have never known a like fate to overtake the patient.

When the meninges have been penetrated, the spinal fluid pressure is taken and then the interchange begins. To the shoulder of the lumbar puncture needle a three-way stop-cock is fixed the side outlet of which leads to a closed glass cylinder of about 200 c c or more capacity. To the horizontal outlet an ordinary Luer syringe is attached. Into the syringe are slowly drawn 5-10 c c of spinal fluid, the stop-cock is turned and the fluid is discharged into the cylinder. Immediately 5-10 c c of air are drawn into the syringe from the cylinder, the stop-cock is again turned and the air injected into the sub-arachnoid space. The remainder of the procedure is just a repetition of these acts. It is important to take the pressure of the spinal fluid frequently, at least after the withdrawal of every 25 c c and, as one approaches the end, more often. Opinion varies as to the relative amounts of fluid to be withdrawn and air injected, but is unanimous that the pressure should be the criterion. If possible, this should be kept constant. I have found that it tends to fall, and that one invariably ends up with a pressure considerably less than the original. For this reason I agree with Carpenter that about 10 per cent more air can be injected than fluid withdrawn, though most writers feel that the ratio should be reversed. In this regard it has been pointed out that the air is taken at room temperature and injected into surroundings of body temperature with a consequent expansion. In the ordinary adult about 100 c c or 120 c c are introduced.

The procedure is tedious, alike to patient and physician, and usually take about forty-five minutes to complete. In the case in which I encountered least difficulty the entire process lasted about twenty minutes. I have found that the fluid is usually difficult to get after 40 c c or so have been withdrawn, and then must be taken off in small quantities at a time. During the operation the patient almost invariably complains of headache at the base of the occiput, and this may become severe. In addition, the reactions which Schoot and Eitel described may be encountered, though I have seen only pallor, headache, sweating and

nausea It may be necessary during the interchange to give the patient whiskey or aromatic spirits of ammonia to overcome his sense of insecurity

It is well to have the subject, during all of this, seated on a stretcher with wheels, so that he may be immediately brought to the x-ray machine with a minimum of disturbance and movement It is important that, while the pictures are being taken, the patient's head should be kept absolutely in a perpendicular plane, otherwise unequal diffusion of the air will take place and distortion of the ventricular shadows result Lateral views are taken from each side, and an antero-posterior exposure with the film at the occiput, the head very slightly flexed, and the tube directed about the hair line, so as to avoid superimposing the shadow of the frontal sinuses on that of the ventricles The patient is then returned to the ward, made to lie flat in a bed, the foot of which is raised, and given another hypodermic injection of morphine, if this is necessary Weigeldt has stated that in cases without obstruction to the aqueduct of Sylvius or the foramina of Luschka and Magendie air in the ventricles is absorbed in eight to ten hours and, following encephalography, unpleasant sequelæ rarely last longer than that

INDICATIONS

There are two contra-indications to this method of air injection, (1) increased intracranial pressure, and (2), posterior fossa tumours In these cases, however, some surgeons perform a combined puncture The ventricle is tapped, fluid is released to overcome the increase in tension, and air is injected into the subarachnoid space in the lumbar region The only encephalography to end in death which I have seen was such a combined puncture, done on a patient with no clinical evidence of increased intracranial pressure, but with a massive infiltrating tumour of the right parietal lobe A lumbar puncture was done about five hours after the combined puncture and air injection At this time spinal fluid gushed out, only a little was removed but apparently the medulla and cerebellum acted as a sufficiently tight plug to prevent fluid escaping from above, and, when the man died about ten hours later, a hernia through the

foramen magnum was found Such a case would have offered a bad prognosis even for ventriculography alone, and still worse, of course if no intervention had been attempted

This procedure has been followed and recommended in many conditions Carpenter writes of its use in cases where diagnosis is otherwise doubtful, in petit mal, convulsions, chronic headache, occasional cases of mental impairment, certain head injuries, etc In 40 cases in which he did encephalography, 19 presented normal findings, 21 abnormal pictures, and 1 died In 23 trephine cases he had 4 normal, 19 abnormal and 3 died Foerster, in addition, has applied lumbar air injection, suboccipital puncture, or ventriculography, in such conditions as hydrocephalus, infantile palsy, tumour, pseudo-tumour, encephalitis, etc Wartenburg adds post-traumatic neurological and psychiatric disorders, dementia paralytica, and suggests its use in differentiating organic from functional hemiplegia As you can readily appreciate the procedure has been employed in practically all available neurological conditions Let us turn now to the results obtained

INTERPRETATION

The interpretation of the results obtained by encephalography demand the attention of an expert radiologist used to this kind of work One looks for variations in the size, shape and position of the ventricles, and for abnormal collections of air, either too little or too much, in the cisterns and in the subarachnoid space surrounding the cortex Numerous reports have been made of the shadows encountered Elsberg and Silbert, after having made casts of the ventricles in cases of brain tumour, and having compared them with the ventricular shadows obtained beforehand, drew the following conclusions In posterior fossa lesions the ventricle contralateral to the growth is regularly more dilated than that of the same side On the side of the tumour the posterior horn is consistently shorter, and is displaced forward and outward as compared with the other This displacement of the homolateral posterior horn may account for the unilateral papilloedema in some cases of tumour In infiltrating tumours of the cerebral hemispheres the lobe in which the growth is located is often larger than the other The vertical planes of the anterior

and inferior horns, in cases with hyperplasia of the hemisphere, are either collapsed or separated more than normal on the side of the tumour, while on the opposite side they are more closely approximated to each other. When there is no hyperplasia the relation of the horns to one another remains unaltered.

Hyperplasia is rarely present in dural tumours and rarely absent in infiltrating growths, therefore, separation of the vertical planes may be of diagnostic value. In comparing supra-tentorial and infra-tentorial lesions the authors found that hydrocephalus occurring with the latter caused relatively little dilatation of the temporal horns, as compared with the anterior horns and bodies of the ventricles. In supra-tentorial lesions dilatation of the inferior horns was as great or greater than that of the others. They were not prepared to say how universal is this finding.

Turning to conditions other than neoplastic, we find Foerster describing dilatation of the ventricle on the side of vascular lesions, dilatation of the ventricle on the side of focal lesions in epilepsy with convulsions beginning in a particular part, and widening of the subarachnoid spaces with dilatation of the ventricles in pseudo-tumour, often owing to infectious or traumatic meningitis. In epidemic encephalitis he also found dilatation of the ventricles. He points out the value of encephalography in differentiating obstructive and communicating types of hydrocephalus, as in the former little or no air will get into the ventricles, and the point of obstruction may be seen. Wartenburg found that following trauma to the skull, even without fracture, there is often widening of the ventricle on the side of the lesion with a rounding off of the upper angle of the "butterfly figure" which is normally assumed by the shadow of the bodies and anterior horns of the lateral ventricles. This angle shows a tendency to wander towards the site of the lesion, when the projection of the angle is towards the superior portion of the brain the signs point more to involvement of that part, when it bends on itself and extends towards the ear the signs point to an involvement of an inferior level of the cortex. In cerebral infantile palsy he states that there is constant widening of the ventricle on the affected side together with large sub-

arachnoid spaces. Encephalography may be used also in attempts to localize tumours causing pressure on the spinal cord, in some of which cases the arrest of air within the intravertebral canal will indicate the point of compression.

It is important to bear in mind that in some of these conditions such marked and definite post-mortem changes are not found, and it would be unwise to lay too great stress on the nature of the changes observed after air injections, until the variations that may occur in the normal are known. It is true that different conditions prevail at these different times, and that encephalography allows a study of what Foerster describes as the "anatomy in vivo." Monrad Krohn, whom I quote from memory, in discussing the paper of Friedman and Kasanin, said that after having carried out this procedure he had come to the conclusion that one could not depend on an equal and uniform diffusion of the air throughout the ventricular and subarachnoid systems, but that after hearing the paper and the discussion it provoked he was inclined to try encephalography again.

TREATMENT

The use of lumbar air injection in treatment is more recent than that in diagnosis, to which the foregoing discussion has been confined, and I have had no personal experience with it. As a result, it will be referred to only briefly. The condition in which it has been used most, and for which best results have been claimed, is post-traumatic headache. It has also been employed in epilepsy, the sequelæ of encephalitis, and other post-traumatic conditions. The technique is the same as that here described, and a similar amount of air is injected. Wartenburg reports subjective improvement in a surprising number of cases, and Carpenter reports three cases of severe chronic headache cured by this means. He says that several other disturbances improved after encephalography without other treatment, and offers as explanation either distension of the membranes or reaction from the presence of the air. Penfield has treated seven cases of post-traumatic headache by means of lumbar air injection. At a recent meeting of the Montreal Medico-Chirurgical Society Malcolm showed two cases

in which he had obtained gratifying results

I wish to present briefly three cases in which encephalography has been employed as a diagnostic measure

CASE 1

The patient a man of 56 years had in January 1925, a febrile illness in which he shook or shivered all over. The left arm and leg shook more than the right. For two weeks after the onset he had weakness of the left side of his body and did not have sufficient strength to hold things in his hand. He had frontal headache at times. In April 1925, he developed a cramped, painful feeling in the left arm, left leg and left side of the face, which was followed immediately by unconsciousness lasting fifteen minutes. During the attack both arms and both legs underwent jerking movements. He had eight such attacks from April 1925, to May 1926, and fewer since. He was admitted to hospital on December 12 1927. The history in this case was very indefinite, the real duration of the attacks could not be accurately determined and the nature of the initial febrile illness was obscure.

Examination showed a tendency for the tongue to protrude slightly to the right, a weakness (?) of the left side of the soft palate, and weakness of the left arm and leg. The tendon jerks were increased on the left as compared with the right. Memory was impaired so much so that he could not tell whether his illness had begun in 1925 or 1926. X-ray of the skull, examination of the fundi and spinal fluid Wassermann were all negative. The cerebrospinal fluid gave a one plus Pandy reaction, and reduced colloidal gold (123200234). Dr Bromer's report of the encephalogram is as follows: "Examination by encephalogram shows a complete lack of sub-arachnoid air in the right half of the skull. The left shows a normal amount of sub-arachnoid air. The right ventricle has an obviously deformed outline, somewhat flattened and thinned. The left is distorted and widened. I think that this is strong evidence of neoplasm, probably glioma on the right side." The patient is still under observation in the outpatient clinic.

CASE 2

The patient, aged 31 years, was admitted to hospital on October 22 1926, with the following history. In 1918 while bunting a football with his head, he suffered a fracture of the skull. For three months after this he had total paralysis of the left side, and for six months numbness on this side. He improved and returned to work. In May 1926 he lost control of his left arm while working at his dyeing. The weakness in this member grew progressively worse. On extension of his arms, he showed a coarse, wavering movement of the entire left arm. The left side was weaker than the right, and this was most marked in the leg. The tendon jerks on the left were increased as compared with the right. Examination of the eyes showed nystagmus, but nothing else abnormal. Lumbar puncture, shortly after admission yielded a spinal fluid with 11 cells per cmm, a two plus Pandy reaction, a negative Wassermann and a reduction of colloidal gold in the paretic zone (5555533000). It was thought at first that he had a cyst resulting from his old accident.

The report of an X-ray of the skull taken on October 22, 1926, is as follows: "Sella measures 4 mm by 8 mm in depth and is normal, convolution markings are normal no other abnormalities can be seen." An encephalogram was done and it was at first believed to present evidence of a fronto-parietal tumour. Re-examination however dispelled this belief, and attributed the previous findings to the fact that the patient's head had been tilted. On November 16 1926 Dr Bromer made his final report which follows: "On final exami-

ation, the lateral ventricles on each side are more nearly of the same size and shape. The head was tilted downwards on the left side and in consequence on the films the antero-posterior view shows the left ventricle only slightly wider than the right and with slightly more blunted horns. (See Fig 1) The stereoscopic lateral



FIG 1—Case 2—Encephalogram antero-posterior view

views show no great difference apparently in the ventricles. I think this second examination practically rules out the possibility of a tumour in the fronto-parietal region as was suggested by the previous films. The sub-arachnoid spaces on the left are also more completely filled with air than on the right. The occipital area in the lateral view has also a little more air as compared with the frontal and parietal areas. I doubt however that this means brain atrophy. (See Fig 2)



FIG 2.—Case 2—Encephalogram, lateral view

During his stay in hospital the patient gradually developed into a most marked and typical case of multiple sclerosis, presenting numerous signs including Charcot's triad of symptoms.

CASE 3

This patient a seven year old Italian girl, was admitted on September 21 1926, with a diagnosis of epilepsy. Her development was normal until 1920 when she had a generalized convulsion followed by weakness of the left arm and leg lasting a day or two. Since then she had had several attacks a year. On examination, the right pupil was larger than the left and both

were very irregular. There was a droop to the left side of the mouth, and the left side of the soft palate moved less than the right. A coarse, rapid, lateral nystagmus was present when the eyes were turned to either outer canthus, more marked when turned to the left. The fundi were negative.

Encephalography was done on October 27, 1926, with the following results: "The anterior horn of the right lateral ventricle is wider than normal, more distended than the left. The posterior portion of the right is much enlarged, and is circular in shape extending upwards and backwards. The left ventricle is

narrowed and distorted also in shape, resembling a compression distortion. The midline septum is not bulging or distorted, however. Very little subarachnoid air (see Fig 3) can be seen on either side. These changes could be due to an internal hydrocephalus involving the right ventricle or to a porencephalon cyst. There is no apparent brain atrophy. The third ventricle is obliterated but the fourth can be seen, however." (See Fig 4)

CONCLUSION

In encephalography we have a useful method of examination and of treatment, the full value of which is not yet demonstrated, but I cannot brush aside the criticisms of Grant with which, in large measure, I agree.

I desire to thank the Philadelphia Orthopaedic Hospital and Infirmary for Nervous Diseases for permission to present this clinical material, Drs Burr, Sinkler and Weisenburg, from whose services the cases were taken, Dr Ralph S. Bromer, the radiologist there, and especially Dr Joseph Michaels, resident neurologist, who kindly collected the plates, abstracted the records, and forwarded all to me.

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FIG 3.—Case 3—Encephalogram, from the front

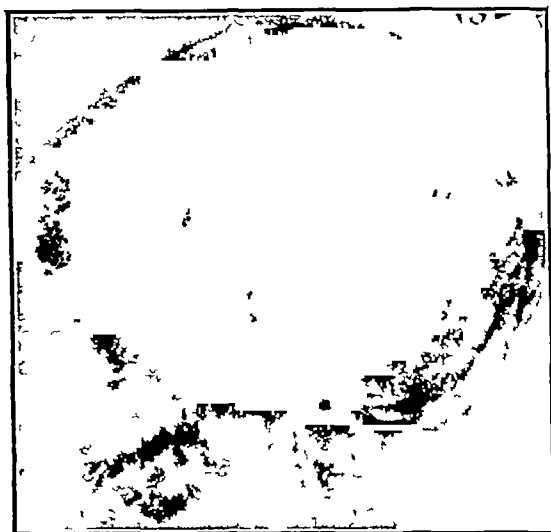


FIG 4.—Case 3—Encephalogram, left lateral view

Plato in his "Republic," Book III, turns prophet, and draws a splendid picture of the day "when our youth will dwell in a land of health, amid fair sights and sounds, and receive the good in everything, and beauty, the effluence of fair works, shall flow into the eye and

ear like a health giving breeze from a purer region, and insensibly draw the soul from the earliest years into likeness and sympathy with the beauty of reason." With all our boasted advance in science and civilization how far short of this ideal do we come to day?

CARCINOMA IN A BLUE DOMED CYST OF THE BREAST*

By L. J. ADAMS, M.D., C.M.,

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THE patient, a woman of 43, was admitted to the Montreal General Hospital on January 9, 1928

She gave a history of acute inflammation of the right breast while nursing her first child one year previously, and of two blows to this breast at the ages of twenty-one and forty-one years respectively

In November, 1926, she first noticed a small lump in the upper outer quadrant of the right breast. It was then about the size of a pea. There was no apparent change in size until March, 1927, when it began to grow gradually. In July, the surface became reddened, and subsequently the increase in size was more rapid. Early in December there was a fairly large amount of grayish discharge from the nipple with diminution in the size of the tumour. There was no discharge of blood from the nipple at any time, and no loss of weight. Since July, 1927, there had been intermittent pain in the breast, radiating down the arm, but never very severe.

On admission, there was found in the upper outer part of the right breast, a large firm mass measuring $12 \times 12 \times 6$ cm. The tumour was not tender and was freely moveable in the breast tissue. A superficial cyst, dark blue in colour, and about the size of a small egg protruded from the upper part of the mass. There was no deformity of the nipple. There were no palpable glands in the axilla.

A diagnosis of cystic mastitis, with possible malignancy, was made.

Simple amputation of the breast was performed on January 11, 1928. When the tumour was incised, a large quantity of clear light brownish fluid escaped, exposing a multilocular cyst with areas of induration in the wall and slightly papillomatous ingrowths.

The microscopical examination of sections of

fixed tissue confirmed the diagnosis of carcinoma made at the time of operation by means of frozen sections.

The patient was readmitted on February 9, 1928, when a radical operation was carried out. No enlarged axillary lymph-nodes were encountered. Her recovery was uneventful.

SUMMARY OF PATHOLOGICAL REPORT

The specimen consists of a female breast, covered by an oval piece of skin, 22×18 cm in size, with the subcutaneous tissue attached. The external surface is as already described (Fig 1).



FIG 1—Photograph of a wax mouldage of the external surface of the breast. Note the large cyst at superior margin.

The cut section (Fig 2) shows a large cyst measuring 9×6 cm by approximately 2 cm in depth. It is sharply outlined and well demarcated from the surrounding breast tissue. The large cyst can be seen to communicate directly with the superficial one which is covered by skin only. The wall is very irregular, with an attempt to form smaller cysts. The lining surface is smooth, except for

* From the Department of Pathology, Montreal General Hospital. Read before the staff clinico-pathological conference, March 8th, 1928.



FIG 2—Drawing of the internal surface of the cyst

several hard yellowish gray nodular masses which project into the cavity

Microscopical sections were taken from the breast tissue outside the cyst, and from the smooth and puckered areas in the wall, to determine whether the condition was a large simple cyst with simple papillomatous growths in the wall or one with malignancy

Those from outside the cyst show fairly normal breast tissue for the age period, those from the smooth areas show a thin fibrous wall



FIG 3—Microphotograph showing carcinoma. The section is taken from one of the hard papillomatous areas

Those from the papillomatous areas (Fig 3) show a fibrous connective-tissue stroma, with a

round-celled infiltration and atypical epithelial cells with hyperchromatic nuclei, growing in irregular groups or strands without any definite structural arrangement. There is a great increase of fibrous tissue, as well as large degenerated tumour areas

The second specimen, consisting of a portion of the skin of the breast, 28 cm long, with the underlying pectoralis muscles and the soft tissues from the right axilla, was received on February 8th, at the time of the second operation. Serial transverse sections were made. After diligent search, microscopical examination failed to reveal any carcinomatous involvement of the glands or deeper structures

DISCUSSION

This case was regarded as a large single cyst of the breast of the so-called "blue-domed" type. Grossly, it appeared as a typical benign cyst, but since malignancy has been demonstrated there are several interesting features to note

There is a great variety of classifications of cysts of the breast. In general, it may be said that they vary greatly in size and number. The blue-domed cysts are usually of the large single variety, but they may be multiple. In Bloodgood's series of 350 cases of cystic diseases of the breast, 174 were large single, 28 were large multiple cysts. The blue dome may not be seen until the subcutaneous tissue is cut, the colour being due to the transmitted light from the contents. The wall is smooth and there are, as a rule, no papillomata. Hemorrhage into the cyst suggests malignancy. As to the occurrence of carcinoma, the condition, especially in the large single cysts, is regarded as comparatively rare, about 2 per cent

The etiology of carcinoma in our case, as elsewhere, is not definitely known, but it is interesting that two frequently mentioned factors, namely trauma and infection, were both present. Again, here is a case of cystic disease of the breast with malignancy, in which the nipple was neither scarred nor retracted, but retained a perfectly normal appearance, even though a discharge had taken place from it

The case is unique in that the blue dome could be seen very readily, and was on the external surface by a thin lamina

only Another feature is that, with carcinoma present no blood could be detected in the cyst-contents

Finally, this case emphasizes once more the importance of careful attention to the history of a lump in the breast It also illustrates that

in a large cyst although situated some distance away from the nipple malignancy does occur

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PATHS FROM THE PERIPHERY*

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"The world that I regard is my self, it is the microcosm of my own frame that I cast mine eye on, for the other, I use it but like my Globe, and turn it round sometimes for my recreation whilst I study to find how I am a microcosm, or little World, I find myself something more than the great"—SIR THOMAS BROWNE, *Religio Medici*

THERE are many paths by which the fleeting impulse from the world outside reaches that connoisseur of impulses, the central nervous system These are of the utmost importance, for, as HENRIK¹ has so aptly recapitulated, "The living body is a little world set in the midst of a larger world It leads in no sense an independent life, but its continued welfare is conditioned upon a nicely balanced adjustment between its own inner activities and those of surrounding nature, some of which are beneficial and some harmful" As lowly vertebrates we paid a good deal of attention to these stimuli from the ectoderm They governed our very life, our habits, were instinctive, stereotyped To the dignified mammal of the modern era they are of no less importance The pre-eminence of man is directly due to his ability to cope most successfully with his environment

When we think of the innervation of the comparatively vast skin surface of the human body there are two questions which should present themselves to our minds In the first instance, what nerve supplies each area of skin and, in the second, from what segments of the cerebro-spinal axis do the nerve-fibres supplying this cutaneous area arise? These questions have found their answers in the construction of two diagrams to show the innervation respectively, of the anterior

(Fig 1) and posterior (Fig 2) surfaces of the human body By correlating the work of Henry Head² and Purves Stewart,³ it has been possible to illustrate by diagram upon the same figure the respective nerve and segmental innervation of any part, in a fairly accurate, but, for purposes of simplicity, a very diagrammatic fashion As the essential importance of this knowledge makes its retention by the physician desirable we have sought a simple method for remembering its detail A plan, originally suggested by Purves Stewart, in the main, has been adopted The cutaneous nerve-supply is familiar to most of us because of our visual memory of these fibres during dissection of the body Hence apart from the confusion of old terminology with B N A nomenclature, they may be simply recalled The arrangement of the cutaneous root areas is considerably simplified if we consider the conception that in the trunk they exist mainly in a horizontal series, whereas in the upper limbs they are represented in longitudinal series, parallel to the long axis of the limb, and in the lower limbs anteriorly they exist serially from above downwards and posteriorly from below upwards Finally, the genital organs receive their innervation, as might be expected, from segments caudal to the segments supplying the posterior surface of the lower limb buds, that is from the third and fourth sacral segments If we consider the body as a long cylinder, beginning above at the head (innervated by the trigeminal nerve) and ending below at the coccyx, then the various root-areas may be represented as a series of horizontal dermatomes running from above downwards, with the nose and mouth in the trigeminal area, the nipples

* A lecture, delivered to medical students at the University of Western Ontario

at the level of the junction between the fourth and fifth thoracic segments, the umbilicus at the junction of the ninth and tenth thoracic, the last thoracic encircling the area just above the pubes, and the anus within the fourth sacral area. Such a plan of the cutaneous innervation

branches of the ophthalmic division of the fifth cranial nerve, while the integument over the forehead, the superior maxillary and infra-orbital, and inferior maxillary regions of the face, are innervated by the ophthalmic nerve, the maxillary nerve and the mandibular nerve

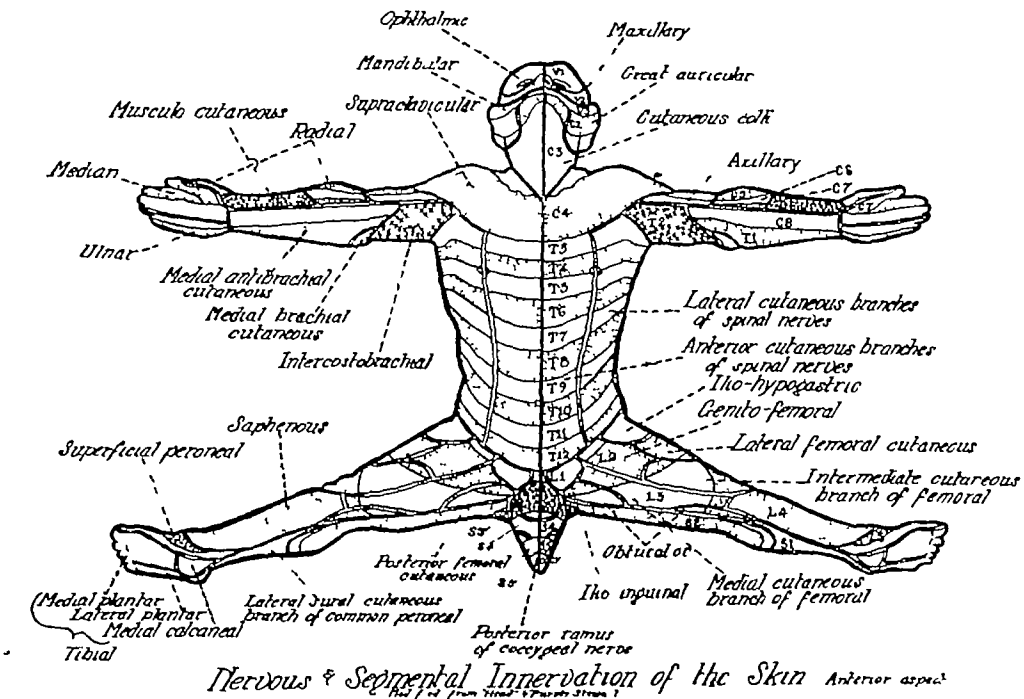


FIG 1

of the trunk, as simple as that of the round worms, requires modification in only two particulars. In the first instance, it is necessary for us to remember that there is a gap in this segmental innervation between the clavicular region, innervated by the fourth cervical, and the upper pectoral region, supplied by third thoracic segments, where the fibres from the anterior rami of the fifth, sixth, seventh, eighth cervical and first two thoracic segments pass distally to supply the fore-limb bud. Secondly, it is necessary to recall that a similar gap occurs in the lumbo-sacral region between the twelfth thoracic segment, just above the pubes and the third and fourth sacral segments in the ano-coccygeal region, where the anterior rami of all the lumbar and the first two sacral segments pass distally through the lumbo-sacral plexus to supply the lower limb buds.

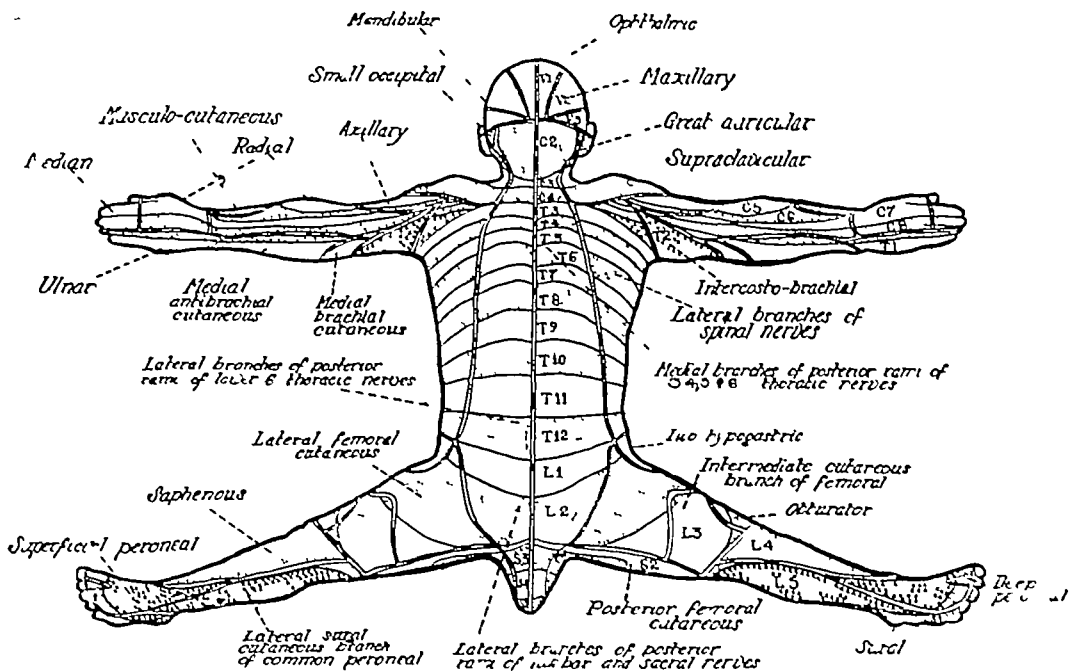
With this conception of the segmental innervation of the trunk in mind, we find the forepart of the scalp, from a point opposite the external auditory meatus forwards, innervated by

respectively. The back of the scalp behind the level of the external auditory meatus is supplied by the greater occipital from the posterior ramus of the second cervical root, towards the midline, while more laterally it receives its innervation from the lesser occipital from the second cervical segment. The auricular region is supplied by the greater auricular from the second and third cervical segments, its posterior portion also receiving some fibres from the lesser occipital nerve. The medial portion of the back of the neck is supplied by the medial divisions of the posterior rami of the cervical nerves, while the sides and front of the neck are supplied by the cutaneous colli nerve from the second and third cervical segments. The supraclavicular, infra-clavicular, acromial, upper pectoral regions, and the skin over the suprascapular fossa of the scapula are supplied by the supraclavicular nerves from the anterior rami of the third and fourth segments of the cervical cord. The skin surface between the upper pectoral region and the level of the nipple is supplied on its anterior

and lateral aspects by the anterior and lateral branches of the third and fourth intercostal nerves, from the third and fourth thoracic segments. The posterior portion of the corresponding area receives its innervation chiefly from the same segments through the posterior rami of the third and fourth thoracic nerves, but in addition receives a few fibres from the muscular branches of the medial divisions of the posterior rami of the fifth and sixth cervical and the first and second thoracic segments (not shown in the diagram). There occurs an oddity of the innervation of the skin surface of the posterior aspect of the trunk, which at this point is well worth noting, in the fact that while the upper part of the posterior aspect of the trunk is supplied by the medial branches of the posterior rami of the spinal nerves, the lower part of the corresponding area below the level of the sixth thoracic segment is supplied by the lateral branches of the posterior rami of these nerves. The skin surface of the body wall between the level of the nipple and that of the umbilicus is about equally divided in its segmental supply between the fifth, sixth, seventh, eighth and ninth thoracic segments, which send their fibres to the back from the posterior divisions of the spinal nerves and to the sides and front through the anterior divisions (intercostal nerves). Between the level of the umbilicus and the

symphysis pubis the abdominal wall is supplied on its anterior and lateral aspects by the anterior and lateral branches of the tenth, eleventh and twelfth thoracic nerves, from the corresponding segments of the thoracic cord. The lumbar region receives a corresponding innervation from the same segments through the lateral branches of the posterior rami of the lower thoracic nerves. Below this level, posteriorly, the skin over the medial gluteal and sacral regions receives its nerve supply through the lateral branches of the posterior rami of the lumbar and sacral nerves, the perineal regions being supplied by the third and fourth sacral nerves, the sacral region by the fifth sacral and coccygeal nerve. Anteriorly, the genitals receive a corresponding nerve supply from the third and fourth sacral segments through the anterior rami of the sacral nerves where fibres at this level arising from the second, third and fourth segments enter into the formation of the pudendal nerve.

If we remember that the upper extremities have grown horizontally outwards from the trunk in the cervico-thoracic region, then it is only reasonable that they should be innervated by segments the fibres of which follow the long axis of the arms, running parallel with those which above and below course band-like about the trunk. Thus, when the arms are held out-



Nervous & Segmental Innervation of the Skin Posterior aspect
Adapted from "The Human Body" by H. R. Carter

stretched at right angles to the long axis of the body, with the thumbs uppermost, the segmental areas are approximately from above downwards C5, C6, C7, C8, T1, and this is true of both the anterior and posterior surfaces of the arm. Since there is so much overlapping in these areas of innervation, we should not be seriously wrong if we divided the arm held horizontally from above downwards, that is from its radial to its ulnar side, into almost equal portions for each of the roots of the brachial plexus of nerves. To this working rule for the segmental sensory innervation of the upper extremity there are two important exceptions. In the first place all the segments sending fibres to the brachial plexus are not represented in the hand, which is divided about equally between the seventh and eighth cervical and first thoracic segments. The seventh cervical segment supplies the thumb and index fingers, front and back, the eighth, the middle, ring, and the contiguous half of the little finger on the front, and only the middle and ring fingers on the back of the hand, while the ulnar side of the little finger on the front and the entire little finger on the back of the hand are supplied by the first thoracic segment. Secondly, it should be pointed out that the inner side of the superior half of the upper arm is supplied by the second thoracic segment through the intercosto-brachial nerve. With these points in mind we are now in a position to consider the sensory nerve supply of the skin of the upper extremity more accurately.

The upper portion of the shoulder cap is supplied by the fourth cervical segment, through the supra-acromial branches of the supra-clavicular nerves. The third cervical segment ordinarily contributing to this nerve is not represented thus far distally. Just distal to this area the remaining portion of the deltoid region is supplied by the fifth and sixth cervical segments through the axillary nerve. The inner side of the upper arm, front and back, from the floor of the axilla to about two inches above the elbow is supplied by the intercosto-brachial nerve from the second thoracic segment. A small area on the inner side of the arm just below the latter, and extending as far as the elbow, is supplied by the medial brachial cutaneous nerve which although it arises from the medial cord of the brachial plexus receives all of its fibres from the second thoracic segment. A large area reaching from the elbow to the

wrist on the ulnar side of the arm, extending over half way across its anterior or volar surface, and about one third of the distance across its posterior or dorsal surface, is supplied by the medial antibrachial cutaneous nerve from the eighth cervical and first thoracic roots. The skin surface of the lateral or radial aspect of the volar surface of the forearm from about an inch below the head of the radius to the base of the thumb, in addition to a small area on the dorsal surface over the lower end of the radius, is supplied by the musculo-cutaneous nerve, the cutaneous fibres of which arise in the sixth cervical segment. The remaining surface on the back of the arm, that is a small area in the mid-line above the elbow, the lateral two-thirds of the dorsal surface of the forearm, together with a small area over the muscular portion of the brachio-radialis at the front of the elbow, is supplied by the radial nerve from the fifth, sixth, seventh and eighth cervical segments. The first thoracic segment usually sends no fibres to the radial nerve. On the front of the hand the little and half of the ring fingers, with their corresponding palmar surfaces, are supplied by the ulnar nerve from the eighth cervical and first thoracic segments, while the ulnar side of the thumb, index, middle and half of the ring fingers, together with the radial side of the palm, are supplied by the median nerve from the seventh and eighth thoracic segments. The fibres from the fifth and sixth cervical and first thoracic roots are not represented in the cutaneous distribution of this nerve. A small area at the base of the thumb, innervated by the musculo-cutaneous nerve, should be included in the sensory innervation of the skin of the hand. On the dorsum of the hand, as on the palmar surface, the little and half of the ring fingers are supplied by the ulnar nerve from the eighth cervical and first thoracic roots. The dorsal surfaces of the distal two phalanges of the thumb, index, middle, and contiguous half of the ring finger are supplied by the median nerve from the seventh and eighth cervical segments, while the rest of the dorsum of the hand, thumb, index, middle and radial half of the ring fingers as far as the proximal interphalangeal joints are supplied by the radial nerve from the seventh and eighth cervical roots. Fibres from the fifth and sixth cervical segments are not carried in this nerve as far as the hand.

In considering the lower extremity we must

think of a quite different plan of innervation from that which obtains in the upper one. If we regard the legs as horizontal outgrowths from the lumbo-sacral region, and visualize them for the moment as strongly rotated from within outwards so that the great toes are uppermost, then the cutaneous root areas are seen to take on a rather segmental arrangement, but in this region, in contrast to the upper limb, the segmentation is in a vertical rather than a horizontal axis, the root areas running from above downwards on the anterior surfaces, and from below upwards on the posterior surfaces of the legs in this position. Thus the various components of the lumbo-sacral plexus are distributed in a very reasonable fashion, in proper sequence from thigh to knee, to leg, to dorsum of foot, to sole of foot, to back of lower leg, to back of thigh. There is but one exception to this plan, which will be pointed out later. The first band-like area, somewhat variable, but measuring a depth of approximately two inches of the skin surface of the thigh, front and back, is supplied by the first lumbar segment. A wide area below this region, extending about half-way down the anterior, medial and lateral aspects of the thigh, is supplied by the second lumbar segment. The rest of the skin surface on the front and sides of the upper leg, as far distally as the level of the upper border of the supra-patellar bursa, is supplied by the third lumbar root. The fourth lumbar segment sends its fibres to the front and inner side of the leg from the suprapatellar region to the ankle, the fifth segment supplying the corresponding area on the outer side and front of the leg from the level of the head of the fibula to the dorsum of the foot. Thus, the area supplied by the fifth lumbar root is lateral to but on a somewhat lower level than the region supplied by the fourth lumbar segment, so that the apparent interruption of the segmental plan, which was referred to above as constituting the only exception, is more apparent than real. The skin over the dorsum of the toes, the sole of the foot, and the back of the lower leg in its lower two-thirds is supplied by the first sacral segment, while the second sacral root supplies the remaining portion of the back of the leg left bare by the lumbar segments, excepting a small area in association with the buttock supplied by the third sacral segment.

Now, keeping this plan of the segmental in-

nervation of the skin surfaces of the lower extremity in mind, we are in a position to consider its more exact nerve supply. A small area of skin on the outside of the thigh, just below the iliac crest and merging on the anterior and posterior surfaces, is supplied by the ilio-hypogastric nerve from the first lumbar segment. The outer and postero-lateral surfaces of the thigh in about its middle third receive their cutaneous nerve supply from the lateral femoral nerve, from the second and third lumbar segments. The upper third of the intermediate zone on the front of the thigh is supplied by the lumbo-inguinal branch of the genito-femoral nerve, from the first and second lumbar roots. A small area of skin on either side over the body and ascending ramus of the pubes is innervated by the ilio-inguinal nerve from the first lumbar segment. The lower two-thirds of the intermediate and the lower third of the lateral zone on the front of the thigh, together with the lower third of the outer surface of the back of the thigh, receive their nerve supply from the intermediate cutaneous branch of the femoral nerve from the second, third and fourth lumbar segments. The medial third of the front of the thigh, from the ilio-inguinal area above to the knee below, is supplied by the medial cutaneous branch of the femoral, from the second, third, and fourth lumbar roots. Two small areas of skin on the inner side of the thigh, an upper one over the origin of the adductor longus, and a lower one at the medial side of the knee, are supplied by the obturator nerve from the second, third and fourth lumbar segments. The inner aspect and inner half of the front of the leg below the knee as far as the lower border of the medial malleolus are supplied by the saphenous branch of the femoral nerve, carrying nerve-fibres only, from the fourth lumbar segment. The anterior and lateral aspects of the outer half of the leg from below the knee to the level of the external malleolus, together with the skin surface over the posterior aspect of the inferior half of the lower leg, receive their innervation from the lateral sural cutaneous branch of the common peroneal from the fourth and fifth lumbar and first sacral segments. Fibres from the second sacral nerve, carried in the common peroneal trunk, are not represented in this nerve. The skin surface over the dorsum of the foot, except the integument

over the little toe, the tips of all the other toes, the adjacent halves of the first and second toes and a narrow area along the outer border of the foot, is supplied by the superficial peroneal branch of the common peroneal nerve from the fifth lumbar and first sacral segments (fibres from the fourth lumbar and second sacral roots not being represented in the cutaneous distribution of this nerve—The adjacent sides of the first and second toes are supplied by fibres from the deep peroneal branch of the common peroneal nerve from the fifth lumbar and first sacral roots. The outer margin of the dorsum of the foot and little toe receive their cutaneous innervation from the sural nerve, formed by fibres received by communicating branches from both tibial and common peroneal nerves from the fifth lumbar and first sacral segments of the cord. The skin surface over the dorsum of the tips of the toes is supplied by the internal plantar branch of the tibial nerve, the fibres coming from the first sacral root. On the sole of the foot the skin over the heel receives its nerve supply from the medial calcanean branch of the tibial nerve from the first sacral segment. The skin over the medial half of the sole and over the plantar surfaces of the first, second,

third and inner half of the fourth toes is supplied by the medial plantar branch of the tibial nerve, while the integument of the outer half of the sole and over the outer half of the fourth toe, together with the plantar surface of the fifth toe, is innervated by the lateral plantar branch of the tibial nerve, the fibres in both cases coming from the first sacral segment. The posterior aspect of the thigh in its intermediate portion, as well as the posterior aspect of the upper half of the lower leg, receives its cutaneous nerve supply from the posterior femoral cutaneous nerve, the fibres arising from the first, second and third sacral roots.

The importance of these conceptions in the diagnosis of cord lesions and of herpes zoster in reference to the segmental innervation, and in the diagnosis of nerve palsies and peripheral neuritis with regard to the cutaneous nerve supply need only be mentioned here.

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‘ And of those things which are incumbent on the student of this Art (of medicine) are that he should constantly attend the hospitals and sick houses, pay unremitting attention to the conditions and circumstances of their inmates in company with the most acute professors of medicine, and enquire frequently as to the state of the patients and the symptoms apparent in them, bearing in mind what he has read about these variations, and what they indicate of good or evil. If he does this he will reach a high degree in this art. Therefore, it behoves him who desires to be an accomplished physician to follow closely these injunctions, to form his character in accordance with what we have mentioned therein, and not to neglect them. If he does this, his treatment of the sick will be successful, people will have confidence in him and be favourably disposed towards him, and he will win their affection and respect and a good reputation, nor will he lack profit and advantage from them. And God Most High knoweth best.’—*Haly Abbas*

Sir Thomas Browne, the immortal author of *Religio Medici*, said that men could never become physicians from books, but “Galen and Hippocrates must be read as fathers and fountains of the faculty. Lay your foundation in anatomy, read also Vesalius, Spigelius, and Bartholinus, be sure to make yourself master of Dr Harvey’s piece *De Circulo Sanguinis*, which discovery is preferable to that of Columbus, study plants, animals, the materia medicamentorum, be not a stranger to the useful parts of chemistry, and so by degrees march on. Having learned anatomy, read over two or three times Sennertus’s *Institutiones*, after which you will seldom meet with any point in physic on which you will not be able to speak as a man. See how institutes are applicable to practice, but in reading satisfy yourself not so much with the results set down as with the true understanding of the nature of the disease, its causes, and proper indications for cure.”—Letter to Dr Henry Power, of Halifax.

THROMBO-ANGIITIS OBLITERANS A PLEA FOR CONSERVATIVE SURGERY

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THROMBO-ANGIITIS obliterans continues to be a source of great clinical interest, partly because the etiology remains obscure, but even more so because the end results obtained are so unsatisfactory that continuous efforts to open up new therapeutic approaches are being energetically pursued. It was first accurately described and recognized as a clinical entity by Buerger¹ in 1908, since which time he and others have added much knowledge regarding its clinical aspects, its pathology and its treatment.

The symptom-complex occurring in young adults, characterized by the presence of indefinite pains in the foot, in the calf of the leg, or in the toes, and, particularly, a sense of numbness or coldness in unfavourable weather, in fact, a group of symptoms passing through all the phases of ischaemic change up to gangrene, had been known by the name of presenile or spontaneous gangrene.

Two pathological explanations had been advanced. One, the theory of Von Winiwarter, who regarded the process as an endarteritis obliterans in which the closure of the vessels was attributed to a proliferation of the cellular and fibrous elements in the intima, the other, the theory of Von Manteuffel, who attributed the vascular occlusion to a primary arteriosclerosis in which the obliterative process owed its inception to the formation and extension of parietal white thrombi, caused by the desquamation of the endothelial cells lining the vessels. Buerger, by his work, was able to disprove both these theories, but it is remarkable how these former explanations are still advanced in discussions on the pathology of this condition.

The gross pathology, in a well defined case, shows that most of the arteries and veins of the extremity affected are obliterated over a large extent of their course. The primary occlusion is caused by the presence of large, obturating, red thrombi, which show, at times, a well defined upper and lower margin. One of us² has shown, in injected specimens, that these thrombi form patchy irregularities in their distribution throughout the vessel. These thrombi may become

organized and so complete the occluding process, or they may become canalized and vascularized in such a manner as to help in re-establishing the circulation. These changes may be present in various stages in different vessels or in the same vessel. In some cases the veins show much more extensive involvement than the arteries. Another striking feature is the presence of a considerable amount of perivascular inflammation, both arterial and venous. This takes the form of a fibrotic thickening of tissues about the vessels, artery, veins, and frequently the nerve, being bound together in a mass of scar tissue.

The histopathology of the condition has also been well worked out, and to this we owe the thorough understanding of the disease processes. The earliest changes appear to be the usual evidences of an acute inflammatory disturbance affecting all coats of the vessel. The intima, media, adventitia, and perivascular tissues are infiltrated with polymorphonuclear leucocytes, and the lumen of the vessel is completely filled with red clot. Buerger has pointed out that certain peculiar giant-cell foci develop, which are characteristic. These cells may be found either in the vessel wall or in the thrombus in the lumen of the vessel. Their presence represents an intermediate stage in the progress of the inflammatory lesion, they being found as the acute stage is subsiding and chronic productive phenomena are beginning to make their appearance. The next stage shows a series of changes where chronic fibrotic processes control the picture. During this period the thrombus becomes organized and canalized, the evidences of the acute inflammatory disturbances disappear, occupying a minor position in the microscopic picture, and finally fibrous connective tissue is laid down in the vessel walls and in the perivascular tissue.

The above is a description of the pathology of the disease itself. Certain changes, however, are also going on in the affected limb as a result of the interference with the circulation. These changes are in the nature of an effort to establish a collateral circulation. As a vessel is blocked by the disease, attempts are made to furnish

blood to the part deprived of its supply by means of new vessels and channels. A struggle is thus constantly going on in the limb between the advancement of the disease and the attempt to re-establish the circulation. One or the other may gain the upper hand. If the progress of the disease outstrips the collateral vessel development, gangrene occurs. The question of collateral circulation is, therefore, one of great importance and will be discussed more fully later.

The clinical course and history of these cases are, as a rule, straightforward. The patient usually is a young male adult between 25 and 45 years of age, very often of Russian or Polish Jewish stock. The condition, however, is not exclusively confined to Jews. We have seen it in Englishmen, French Canadians, Syrians, and one² of us has reported twenty-five cases seen in China among the Chinese. The condition is fairly widespread in Japan, and sporadic cases have been reported among several other nationalities.

The disease manifests itself in its early stages in different ways. At times the patients will give a history of vague pain, either in the foot or toes. Occasionally, they will complain of a stinging "rheumatic" pain in the region of the tibia and calf of the leg. Others may only be conscious of the foot becoming cold and numb in cold weather, under circumstances in which a healthy foot would not react to the temperature to a similar degree. Again, crampy pains may appear in the muscles of the calf after walking (intermittent claudication). In one case seen by us the only history obtainable was of indefinite pain in the thigh, and yet the disease had progressed sufficiently to obliterate the pulsation in the dorsalis pedis artery. Some patients may give a history of pain and tenderness, with at times redness over many of the superficial veins of the extremity. These areas may show a tendency to disappear and reappear in an irregular manner. The name of migrating thrombophlebitis has been given to this condition, and Buerger considers these changes as almost pathognomonic.

These symptoms outline the preliminary history of the progress of the disease. They may persist for weeks, months or even years, only to be followed by a series of trophic changes resulting in ulceration or gangrene. The earliest manifestation of gangrene may be the development of a hæmorrhagic bleb, a pustule, or a dry dead patch of skin on or near the toes, or on the

heel. The slightest trauma may be sufficient to usher in these changes. Preceding this there is often intense pain, indicating the progress of the vascular obliteration to a point where the gangrenous process might be initiated at any moment.

At any stage with the above mentioned symptoms a new and characteristic sign may make its appearance. This is a peculiar blush of the toes and dorsum of the foot, sometimes extending to the ankle, or slightly above it. It is best shown with the foot in the dependent position. The affected toe is the first to change colour. It becomes a bright red and this gradually diffuses over the area previously indicated. This colour change is called "rubor," or "erythromelia." Associated with this redness, there is a marked increase in the local pain. At this point the disease may rapidly advance to actual gangrene or, adequate collateral circulation developing, the symptoms may subside. Erythromelia is undoubtedly due to a dilatation of the superficial capillaries, probably in response to the anæmia produced by the obliterating vascular processes. It is our opinion that the establishment of rubor marks a critical point in the progress of the disease.

Physical examination at this stage will show, in addition to the rubor and possible ulceration, a loss of pulsation in one or more of the palpable vessels of the extremity. Thus, the dorsalis pedis artery alone may be pulseless, or the lack of pulsation may extend to the tibials, popliteal, femoral, or even to the iliac vessel. The affected limb is of a lower temperature, feeling cold to the palpating hand. It will further be possible to demonstrate a phenomenon which is pathognomonic of organic vascular occlusion. Elevation of both limbs simultaneously will show a marked degree of pallor in the affected limb in comparison to the healthy limb. Depression of both limbs will show a much slower return of the pink colour to the diseased member, this pink gradually deepening into the rubor previously described. The contrast between the two limbs, is, as a rule, marked. We have already stated that the limb may show the reddened, tender, indurated areas along the course of a superficial vein, indicative of the migrating thrombophlebitis, and if the ulcer or gangrenous patch has become infected, a well marked lymphangitis or cellulitis with œdema may be present. Although reference has been made largely to the lower extremity, it must be under-

stood that the vessels of the upper extremity may also be affected

Recent work has been carried out with the Pachon oscillogram. This instrument records a smaller range of oscillation in the affected than in the normal limb.³

We have already referred to the progress of the disease as a struggle going on between obliteration of vessels and re-establishment of new channels. We believe a thorough understanding of this feature of the disease to be essential. Its course is not one of a smooth uninterrupted progression. We feel that characteristic of the condition is a series of exacerbations and remissions. With each exacerbation more and more vessels are obliterated. The disease advances proximally. The subsidence of the symptoms produced by the vascular obliteration would indicate that enough collaterals have been opened up, thus preventing the anæmia from progressing to the stage of gangrene. So it will be seen that the progress of the disease is uneven and that this struggle may go on for a number of years, until finally the disease is arrested, or gangrene supervenes.

It is evident that any rational therapeutic approach must consider two factors. First, the removal of the cause, and, secondly, the development of the collateral circulation, so that the impending gangrene may be averted. In regard to the first factor the etiology of the disease remains obscure. Many theories have been advanced, all have been found wanting.

The suggestions of excessive smoking,⁴ exposure, the increase in the viscosity of the blood,⁵ the use of food containing vaso-constrictors,⁶ such as rye fungus, alterations in blood chemistry⁷ and changes in hæmatological findings,⁸ endocrine disturbance,⁹ and finally the bacteriology of the disease,¹⁰ have all received their share of attention, but have failed to find confirmation. The work of Rabinowitz is worthy of comment in view of the recent revival of theory of the specificity of micro-organisms in various diseases. We are, however, faced with the striking lack of confirmation of this work. The lesion undoubtedly appears to be of an inflammatory nature and further work along bacteriological lines would be of interest.

Supporters of these various theories of the cause of the disease have advanced methods of treatment intended to act upon the respective etiological factors, so that dietary restriction, organotherapy, intravenous use of solutions to

diminish viscosity of the blood have all played their part in the therapy of this disease. The majority have failed to survive a thorough test. We are consequently faced with the necessity of evolving measures to promote the establishment of an efficient collateral circulation, realizing that the impending gangrene could be prevented and the co-incident pain relieved by supplying blood to the ischaemic areas. Those cases that show spontaneous arrest of the disease over periods varying from one to several years have been shown to have established a well developed collateral circulation. Therapeutic measures along these lines can do no better than to imitate Nature's method.

These measures may be divided into two groups. First, those which aim, by some mechanical measure, to produce rapidly an efficient collateral circulation. An example of this type is the ligation of the femoral artery, as advocated by Lewis and Reichert.¹¹ Secondly, those which aim at the relief of pain. Pain is the symptom which will most often serve as the indication for operative interference. Relieve the pain and the natural tendency towards the formation of a collateral circulation will be allowed to proceed without interruption. In discussing the first group, mention might be made of the operations formerly attempted with the object of increasing the blood supply to the anæmic area. These are the operations of ligation of the femoral vein¹² and arteriovenous anastomosis.¹³ Both of these, however, were based upon an improper understanding of the pathology of the disease, and naturally found no place in its treatment.

The work of Lewis and Reichert¹¹ was the first rational attempt to surgically assist the compensatory mechanism of collateral circulation to develop. We feel, however, inclined to doubt the efficiency of ligation of the femoral artery. In the irregular progress of the disease one attack of arterial obstruction follows on another each attack presumably obliterating a portion of the vessel at a little higher level. This corresponds then to repeated ligation of the artery. It is difficult to see how ligation of the vessel at one spot will do more than what amounts to repeated ligation, as evidenced in the progress of the disease. It is apparent, too, that Lewis' operation is applicable only to those cases in which the femoral artery in Scarpa's triangle is patent. This would naturally limit the scope of the operation. We have so frequently found the femoral artery obliterated in its whole course that

we look upon those cases as the exception rather than the rule. It is possible that Lewis and Reichert based their operations on the conclusions of Halstead,¹⁴ namely, that the higher the ligation the greater the possibility of a sufficient collateral circulation being established. Halstead's work, however, was based upon experiments where the vasculature distal to the point of ligation was a healthy one. In Buerger's disease the opposite obtains. The vessels distal to the ligation are in the majority of instances thrombosed and obliterated.

We have, however, to account for the fact that improvement has followed on Lewis' operations just as improvement has been reported to follow other operations designed to alleviate this condition. How can we explain these results? We know that the advance of the disease, each new extension of the obliterating process, deprives the extremity of blood, thereby producing great pain. As a rule, at this stage, the patient will present himself for treatment. We know that coincident with the occlusion collateral circulation begins to be established. Irrespective of any operative procedure, the process of collateral establishment will proceed as rapidly as it can. We feel, therefore, that the majority of these measures, regardless of their rationale, act only by relieving pain, and in no way tend to mechanically assist in collateral development. We cannot attempt, at present, to fully explain the relief of pain brought about by periarterial sympathectomy, ligation of the femoral vessels, intravenous injections of hypertonic saline, foreign protein therapy, etc., but we feel that in this relief lies the true value of their action.

Based upon our understanding of the disease, as explained in the foregoing paragraphs, we feel that conservatism should be the keynote in the treatment of this condition. It is only a very few years ago since high amputation was considered the treatment of choice, irrespective of the extent of the gangrene. It is interesting to see how gradually the surgical mind as regards this radical procedure has undergone a change. In a personal communication to one of us, Silbert of the Mount Sinai Hospital of New York City stated that he had reduced the percentage of cases coming to amputation from 70 per cent to 12 per cent by means of conservative treatment. The figures from the department of surgery of the Royal Victoria Hospital show that during the last ten years a total of nineteen cases were admitted suffering from thrombo-angitis ob-

literans. Of these nineteen admissions the last five were treated along purely conservative lines. Of these five only one up to the time of writing has required amputation, and that on account of the presence of a fairly extensive gangrenous area developing on the dorsum of the foot. Of the fourteen cases treated prior to the last five admissions, and before the adoption of prolonged conservative treatment, eleven, or 79 per cent, underwent amputation, eight requiring bilateral amputation. These striking figures illustrate well the possibilities that can be obtained by treating these patients by the most conservative means available.*

We have already made brief mention of certain measures which have been tried in this condition with apparently good results. From our own experience, and from an extensive study of the results obtained by others the following mode of procedure is suggested—

- 1 Rest

- 2 Dietary restriction and absolute restriction of tobacco. The belief is prevalent in the larger clinics that tobacco smoking as an etiological factor is not to be minimised.

- 3 *Buerger's exercises*. These exercises tend to mechanically improve circulation in the affected extremity. They consist of elevation of the leg for the minimum amount of time necessary to produce ischaemia (30 seconds to 3 minutes). The leg is then put down over the edge of the bed and kept there for one minute after the maximum red colour has been produced (2-5 minutes). The leg is then placed in the horizontal position for from three to five minutes, during which time dry heat is applied. This group of movements is repeated during an hour and every alternate hour is taken up in this way. During the rest period dry heat is applied continuously. It is very difficult to obtain a patient's co-operation for the proper carrying out of these exercises on account of their tediousness. A cycle of these movements every third hour will probably be of some benefit, without unduly taxing the patient.

- 4 Intravenous injection of hypertonic saline. It has been found in some clinics that 300 c.c. of

* Since writing the above it has been necessary to amputate an extremity of one of the patients, who had been treated by conservative means. It is noteworthy that this patient had refused to stop smoking or, to come regularly for treatment. The oscillometer readings in this case were very low and periarterial sympathectomy had been tried in an effort to relieve the pain without result. The femoral artery was shown to be obliterated at this operation.

5 per cent saline, injected intravenously, will help to relieve pain. This is given three times a week until definite relief occurs.

5 Allen and Browne¹⁵ have produced increased warmth in the extremity with relief of pain by the use of typhoid vaccine in sufficient quantities to produce a sharp general reaction.

6 During the acute period when pain fails to be relieved by any of the above procedures, or by the use of the ordinary drugs, (morphine, aspirin, codeine, veronal, etc.) periarterial sympathectomy may be attempted. Good results have also been reported following lumbar ganglionectomy. We do not feel that much benefit can be expected from these procedures.

7 Frequently, when the condition is improving and the pain has subsided, we are left with a patch of gangrene affecting one of the toes. This can be locally excised or the toe amputated. Healing will rarely take place by first intention but the wound will slowly granulate and eventually cicatrize.

SUMMARY

Thrombo-angitis obliterans partakes of all the phenomena of an inflammatory disease affecting blood vessels, nerves, and perivascular tissues of the extremities. Its progress is charac-

terized by a series of exacerbations and remissions of varying length and varying result. Relief of the condition will depend upon the establishment of an efficient collateral circulation. Conservative measures of treatment will tend to permit the establishment of this collateral circulation. By use of these measures high amputation will be necessary in a much smaller number of cases.

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ETHYLENE ANÆSTHESIA*

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THERE is nothing new in the idea of using ethylene as a general anæsthetic. Twenty years ago Luckhardt, to whose work, chiefly, we owe this agent, began animal experiments with it, proving it to be non-toxic, analgesic and anæsthetic. At that point the work was dropped, but early in 1923 attention was again drawn to ethylene by Easson Brown in Toronto, and by Luckhardt and Carter in Chicago.

Brown, whose attention had been attracted to ethylene by the statement that it was one of the impurities in a commercial ether, read a paper in Toronto, describing some animal experiments

with ethylene, which paper was published in the *Canadian Medical Association Journal*†

About the same time, Luckhardt's work had progressed to the point where he and Carter arranged a demonstration of ethylene anæsthesia on laboratory animals, and on some volunteers, before a group of Chicago surgeons and anæsthetists, and a few days later on March 14 1923, ethylene as an anæsthetic for a surgical operation was given for the first time by Dr Isabella Heib in the Presbyterian Hospital there.

The anæsthetists at the Presbyterian Hospital have always been strongly opposed to the use of premedication, and consequently were even more handicapped by the shortcomings of nitrous

* Read before the Winnipeg Medical Society, May 4, 1928

† March, 1923, *ibid*, 210

oxide than others were. This probably accounted in some measure for the very enthusiastic reception accorded this new agent, both by anæsthetists and surgeons there.

Six or seven months later, at the International Congress of Anæsthetists in Chicago, ethylene was the centre of interest, and certainly the most talked-of subject, but at that time the general opinion seemed to be that methods of manufacture were not sufficiently standardized, and that ethylene anæsthesia was still more or less in the experimental stage. Since that time methods of manufacture and technique have progressed until now the use of ethylene has spread to every clinic and hospital of importance in the United States, and to many hospitals in Canada, and it can be said to be as definitely established as any other anæsthetic agent.

The method of manufacture is of little interest to us, but some of its physical characteristics are worthy of attention. It is a gas at ordinary temperatures and pressures, but is stored in liquid form in tanks, as nitrous oxide is, under considerable pressure. It is, like ether, highly soluble in fats, a lipid solvent. Its boiling point is -157°F , lower than nitrous oxide which is -137°F . Ethylene is very rapidly eliminated on account of its low boiling point, although its affinity for fats makes its elimination somewhat slower than nitrous oxide with its somewhat higher boiling point. It seems to exist in the blood merely in a state of solution, apparently not combining with the hæmoglobin.

Ethylene, speaking generally, occupies a place in the scale of anæsthetic potency about midway between nitrous oxide and ether, partaking to some extent both of their advantages and disadvantages but bridging what was previously a rather awkward gap between them.

To begin with the disadvantages. One cannot help mentioning the odour, because it is the first thing to attract attention. It has been described by almost everyone as unpleasant, but perhaps the most striking thing about it is the ease with which one becomes accustomed to it. So far as patients are concerned, I have never heard one complain of the odour. One may induce anæsthesia with nitrous oxide if desired, but, in any case, induction with ethylene is so rapid that one or two breaths are all the patient will notice. The other and the only serious objection to ethylene is its explosive character. This is a very real danger, and definitely rules

out the use of ethylene in cases where cautery or flame of any sort may be present or used. It is also impossible to use ethylene in the presence of diathermy apparatus, x-ray machines, and other electrical apparatus from which sparks may be given out. There is also danger from static sparks. At the same time, while unfailing caution must be exercised, one should realize that the danger of explosion is within certain definite limits, and is really probably no greater than with ether vapour. In this connection we may remember that the combustible range for ether vapour, as given by the Bureau of Explosives, lies within the limits ordinarily used in anæsthesia, while that for ethylene lies far below the mixtures required for narcosis. A good many of the explosions reported, and there are not many after all, have occurred when the apparatus was not in use, from ethylene left in the breathing-tube and mask, and they could have been prevented by shutting the ethylene tank valve, exhausting all the ethylene in the machine, and flushing the tube and mask with nitrous oxide before finishing the anæsthetic.

Ethylene itself, in the cylinder, and until it has been mixed with oxygen, cannot explode. Mixtures in common use contain from 10 per cent to 25 per cent oxygen, and Easson Brown has determined experimentally that the minimum amount of oxygen necessary for a mixture to explode was from 40 to 45 per cent, mixtures from this percentage up giving increasingly violent explosions. It is almost out of the question for escaped ethylene to reach explosive proportions in the air of an operating room. It has been estimated that it would require six hours of continuous anæsthesia, with no ventilation, for the atmosphere to reach the required percentage. McKesson thinks that ethylene is probably less explosive than ether vapour under ordinary operating conditions.

The general opinion is that if reasonable care is taken and is *always* taken, ethylene is as safe as ether, so far as explosion is concerned. This does not mean, however, that one can ever relax his vigilance. It is the easiest thing in the world to drop into the familiarity which breeds contempt, and one must draw a definite, hard-and-fast line in connection with the use of ethylene.

The advantages of ethylene are many. As stated before, induction is very rapid, and not unpleasant. There is practically never the excitement that one occasionally sees with

nitrous oxide, which has gained for that anæsthetic agent the term "laughing gas." The ease and rapidity of induction with ethylene are of special value in dealing with alcoholics, drug addicts, and other extremely nervous people.

The relaxation obtained with ethylene is one of its marked advantages over nitrous oxide, though it falls short of ether in that respect. It resembles ether in that the relaxation is not obtained immediately, but approaches its maximum only after ten minutes or longer, and for this reason, in cases requiring relaxation, the anæsthetic should be begun as early as if one were using ether. We have found ethylene so much superior to nitrous oxide in this respect that it has eliminated almost entirely the need for adding ether to gas anæsthetics in the case of laparotomies. The relaxation which can be obtained is such that it has been found possible to repair a perforated duodenal ulcer under pure ethylene-oxygen anæsthesia. You will realize that this implies both relaxation from the anæsthetic, and co-operation from the surgeon. As a matter of fact, it is never possible to use gas-oxygen anæsthesia without this latter factor.

The colour under ethylene differs greatly from the dusky, often cyanotic, hue under nitrous oxide. It is usually a bright rosy pink, accounted for to some extent by the increased oxygen percentage permissible with ethylene, over that possible with nitrous oxide, but it has been suggested that it is due to a lowered tissue metabolism under ethylene, in which less oxygen is drawn from the blood. If that is true it may be a factor in its evident advantage in toxic goitres.

In the matter of blood pressures there is some difference of opinion, but most anæsthetists agree that there are no changes in readings, under surgical anæsthesia, in normal patients, *if the element of asphyxia is eliminated.* The following statements may be quoted:

"As ethylene is known to have little effect on the blood pressure it is well suited for the cardio-vascular, nephritic and diabetic patient" (Donald Guthrie).

"In the absence of hæmorrhage there is little change in blood pressure, whereas in cases of hypertension the tendency to a reduction is usually well-marked" (Hastrieter).

"The blood pressure is lowered in deep anæsthesia, unchanged in others. The pulse and

blood pressure are influenced less by ethylene than by any other agent" (Christiansen).

"It is without marked effect on ordinary blood pressure. In chronic hypertension pressures may drop almost to normal level under ethylene without danger, provided the pulse rate decreases also."

It has been stated by some observers that there is an increased oozing from superficial tissues. Others deny this, and have reported several series of cases in which the bleeding time and coagulation-time were taken before, during, and after ethylene anæsthesia, and practically all report that both are decreased during anæsthesia. This condition usually becomes more marked following anæsthesia, and persists until the following day when the times become normal. This was especially noted in a series of jaundiced patients and should it prove true, is a most important observation.

There is no pulmonary irritation with ethylene. It may be given with safety in acute respiratory conditions, and is especially valuable in some of these, as for instance, in acute abdominal conditions, with pneumoma, where nitrous oxide is usually insufficient without the addition of some ether. Ethylene has been given in many thousands of tuberculous patients for varied procedures with no lighting up of quiescent lesions or aggravation of active ones.

There is no effect on the kidneys, and ethylene may therefore be used for nephritis as safely as nitrous oxide. It is said that ethylene is the only agent which does not decrease the CO_2 combining power of the blood, and that it in fact increases it, which should increase its use in diabetics.

The heart action does not seem to be affected by ethylene, and the slower respiratory rates, with their accompanying slower pulse rates, must be beneficial to patients suffering from heart lesions.

It is said that ethylene produces less post-operative shock, both immediate and remote, less headache than that frequently following nitrous oxide, less vomiting, nausea and general discomfort than following ether, though somewhat more than that following nitrous oxide. Gas-pains have been said to be less than after ether and chloroform anæsthesia. Patients with low hæmoglobin percentages do well on ethylene, better than on nitrous oxide because of the larger percentage of oxygen given. In fact, we

have a decided impression that the larger amount of oxygen is responsible for most of the benefits, since we believe that the element of relative asphyxia is responsible for many of the post-anæsthetic discomforts and dangers.

Sweating is usually noticeable under ethylene by its absence, the skin being warm and dry, and this is a decided advantage in the dehydrated patient. It is astonishing how much fluid the sweating patient can lose in the course of an hour or more.

Experimentally, on isolated uterine muscle, ethylene is the only anæsthetic which does not show an inhibiting effect on contractions. Whether or not this holds good in obstetrical practice I do not know, but ethylene appears to have no deleterious effect on mother or child. My experience with it in obstetrics is too small to base upon it any opinion as to its relative value.

Surgical anæsthesia from ethylene presents a patient whose condition more closely approaches the normal than is the case with any other anæsthetic agent, with rosy colour, slow regular respirations, slow, regular, full, pulse, no mucous or salivary secretion, usually good relaxation, and a warm, dry skin. Recovery from the anæsthesia is rapid, though vomiting is somewhat more common than with nitrous oxide. Recovery is not quite so sudden and complete as it is with nitrous oxide, where the patient is sufficiently conscious to appreciate a good deal of the more acute pain of his wound. Ethylene appears to leave a persisting analgesia behind it, which makes people somewhat more comfortable. Convalescence is definitely shortened with ethylene, as with nitrous oxide, these two gases usually shorten the hospital stay of patients by a day or two.

With all this information available for some time, the curious thing is, not that ethylene anæsthesia was introduced into St. Boniface Hospital in January of last year, but that none of us had done it long before. When we spoke of buying a McKesson gas machine a year earlier, we suggested to Dr. Fahrni, the chief of our surgical staff, that we might get one with an ethylene attachment. With his encouragement, we did. But later, when we decided to try ethylene, we had quite unexpected difficulty in getting any to try. One firm assured us that the railroads and express companies in Canada would not carry ethylene, and, that they them-

selves were decidedly not interested in handling it. The trouble was mentioned to Mr. Martin, then of the Surgical Supply Company, and a tank of ethylene was delivered in short order, and there has been no further trouble in obtaining it.

After fifteen or sixteen months' experience, our ideas about ethylene have become more or less crystallized. We usually induce anæsthesia with nitrous oxide-oxygen, but find straight ethylene-oxygen very valuable in alcoholics, and all highly nervous people. Probably it is as good a routine as to induce with nitrous oxide, but we feel that we have more or less accidentally avoided some of the dangers of explosion by this method, as we have been careful to flush out all ethylene from the machine before leaving it. This leaves it free from odour for the next patient, and also obviates to some extent the danger of explosion from static sparks when the machine is idle.

We think ethylene is definitely indicated in the extremes of life (it has been used in patients from three days to eighty-four years old), in septic cases of all kinds, and in anæmic patients. We think that almost all laparotomies in which it is proposed to use gas-oxygen, either on account of some definite indication or from preference, are better done under ethylene than under nitrous oxide. But the type of case in which we think ethylene is really invaluable is in the toxic goitres. Here are people who are really short of oxygen when they are breathing air with its 20 per cent content. Imagine how they find themselves, breathing an anæsthetic mixture of nitrous oxide and 10 to 15 per cent of oxygen, which is the average amount permissible, even with the additional help of novocain. Within a very few minutes these patients present a very unpleasant picture. The relative anoxæmia under their greatly increased oxygen requirements, results in a greatly increased respiratory rate, the pulse following the respiratory lead, the patient is perspiring and cyanotic, and the anæsthetist feels much more miserable than most of you even imagine. Think, too, of the purely physical exhaustion induced by breathing forty or fifty times a minute, for forty minutes or an hour or even more, then think of the strain on a heart which is trying to keep up with a situation like that. Imagine watching patients like that for years, wondering what one could do to change the

picture, and then some morning turning a valve and altering the entire appearance in the space of three or four breaths. It is hardly possible to understand how sudden and how gratifying this change is without seeing it. On one occasion, for instance, the machine with the ethylene was not available for ten minutes or more after I anesthetized with nitrous oxide a fairly sick exophthalmic goitre patient, and during this ten or twelve minutes under nitrous oxide oxygen, even with the oxygen pushed to the point of very light anesthesia, the respiratory rate quickly reached 48 per minute, with the pulse racing along trying to keep pace with it, at 140. When the switch to ethylene was made, the second breath sounded so different that the surgeon said, having had experience with this before, "What has happened, has the ethylene come?" Beginning with the third respiration under ethylene the respiratory rate was 28, and later dropped to 24. The respirations gave one an impression which cannot be described better than by saying that it sounded as though they satisfied the patient. The pulse quickly followed suit, dropping to 120, then to 110, staying between that and 100 for the rest of the operation. This change was so marked and so constant in our earlier goitres under ethylene that we now either carry them through entirely under ethylene-oxygen, or turn to that, after starting them with nitrous-oxide, as soon as unconsciousness is attained. Our habit of flushing out ethylene with nitrous oxide just before the end of an operation is perhaps not good practice in these people, for one often sees them "steam up" again, even with these few breaths of nitrous oxide, but it is in the interests of safety.

We are very decidedly of the opinion that ethylene is the anæsthetic of choice for goitres

which have any degree of toxicity. It has been possible to carry practically all our goitre cases with 20 per cent oxygen, and in many, particularly of the more toxic ones, the percentage can be increased to 25, 30, or even 35 per cent, with satisfactory anæsthesia. The reflex spasms which fairly often occur in goitre work, and which should be merely momentary embarrassments under light anæsthesia, often develop into very unpleasant situations when the patient is under deeper anæsthesia. This light anæsthesia, so important in the cases in which the trachea is often distorted or compressed to some extent by manipulation, and in which the nerves may be irritated indirectly by traction or pressure, even though they may never be directly irritated, is much more easily and more evenly maintained with ethylene than is a similar stage under nitrous oxide.

We have, in fact, almost arrived at the point where we feel that any case for which nitrous oxide is advisable will do better under ethylene, and we have quite arrived at the point where we must say that the range of gas-oxygen anæsthesia has been extended to include numerous patients who were formerly outside it.

It is a great satisfaction now to know that, while Dr. Richardson, formerly senior interne in St. Boniface Hospital, introduced the use of ethylene, and nitrous oxide as well, in Brandon, nearly a year ago, the use of ethylene is becoming more general in Winnipeg.

We would like to take this opportunity of expressing our great appreciation of the hearty co-operation and support which the surgical staff particularly, and many visiting surgeons, also, at St. Boniface Hospital, have given us in this matter.

A case of functional aphasia—"The celebrated St. John of Beverley, being accustomed at the beginning of Lent to seek out some specially sick or poor person to whom he might do good, found a boy who was completely dumb, so that when he came to the bishop to receive alms he could not speak a single word. He was, however, as appears, not deaf. Besides this, he had so much scurf and scab on his head that no hair would ever grow there, but only some bristly locks were seen standing round about it. The bishop provided a lodging for the youth near his own house, and on a certain day called him before him, and making the sign of the cross on the

dumb boy's tongue said, 'Pronounce some word, say Gae (yea)'. The boy immediately said what he was ordered. The bishop then added the names of letters 'Say A'. He said A. 'Say B,' and he said this also. And when he said after the bishop the names of the letters, the latter proceeded to put syllables and words for him to say. And when he had repeated all these properly, he desired him to say whole sentences, and he did so, and went on talking the whole of that day and part of the night, so that he was completely cured."—Dr. Payne, Fitzpatrick Lectures, 1903.

Case Reports

DOUBLE FRACTURE OF THE MANDIBLE PREDISPOSED BY AN IMPACTED THIRD MOLAR

By DR W AUBREY CRICH,

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Toronto

Mr F, aged 22 years, came to the Lockwood Clinic on January 30, 1928, on account of pain and swelling at the angle of the jaw on the left side and inability to use his lower jaw

History—On the afternoon of January 21st, he had been boxing and had received a heavy blow on the left side of his chin. This blow had lifted him off his feet, had dazed him a little, but had not terminated the bout. His mouth had bled, and he had spat considerable blood. He experienced difficulty eating that night, but was able to move his lower jaw sufficiently to eat soft food. The jaw became more painful during the night and began to swell at the angle on the left side. Pain was not severe at any time, but the lower jaw became stiff and after a day or two he found that he could not use it, neither could he bring his anterior teeth together. Several days later a painful swelling appeared in the bicuspid area on the right side of the mandible. This drained and the pain disappeared.

Examination—The patient was a well-nourished individual. He had considerable swelling at the angle of his lower jaw on the left side, and could not open his mouth on account of trismus of the muscles of mastication. The anterior teeth were not in occlusion, the greatest amount of separation being in the region of the first bicuspid on the lower right side. The lower posterior teeth were fairly well up in occlusion. On manipulation, definite movement of the mandible could be seen between the lower right bicuspid teeth. Pain in this area, and also in the area of the angle on the opposite side, was increased by the slightest movement of the mandible. The lower right first bicuspid tooth was slightly loose. There were no areas of anaesthesia present, therefore no injury to the inferior dental nerves, nor any ecchymosis. It was difficult to obtain a good view of the lower left molar area, but the third molar was seen to be missing. There was no break in the mucous membrane in this area.

Diagnosis—With these clinical signs, a diagnosis was made of double fracture of the mandible, compound on the right side, and probably simple on the left side. Extra and intra-oral x-rays confirmed the diagnosis. The fracture at the angle was seen to be complicated by an impacted third molar which was lying in a horizontal position, with its crown lying in the line of



FIG 1—An x ray showing an impacted third molar lying in the line of fracture. The injury was the result of a blow received on the left side of the jaw during a boxing bout.



FIG 2—An x ray showing the fracture just distal to the second bicuspid which occurred on the opposite side in the case described in Fig 1

fracture. The x-ray showed that there was little displacement in this area. The line of fracture on the right side was shown just distal to the first bicuspid and extended down through the socket of this tooth. Reduction of the fractures was advised after the removal of the lower right first bicuspid tooth.

TREATMENT

The lower right first bicuspid was removed under local anaesthesia. The occlusion was studied and it was seen, from the abrasion of the incisal edges of the central and lateral incisors, that the patient's teeth had not been in perfect occlusion. This was interesting, as the most certain guide for restoration of the fragments to their normal position is the restoration and main-

tenance of the teeth in their normal occlusion Gilmer's "modified method" of wiring the lower teeth to the teeth of the upper jaw was the method of choice. Fixation of the splints and reduction of the fractures is most satisfactorily accomplished under the influence of $\frac{1}{2}$ gr of morphine sulphate and 1/150 gr of scopolamine



FIG 3—Gilmer's modified method of wiring the lower teeth to the teeth of the upper arch in a fracture of the mandible



FIG 4—Side view showing the method used in wiring the lower teeth to the teeth of the upper arch in a fracture of the mandible

On February 1st, splints in the form of arch wires of fourteen gauge German silver wire were made to conform to the buccal surfaces of the teeth in the upper and lower arches, extending from the first molar on the left side to the corresponding tooth on the opposite side. The arch wires were annealed, polished, and sterilized before being used. The ends of the upper arch wire were bent downward to make a small loop in order to lessen irritation of the tissues, while the ends of the lower arch wire were looped upwards. Twenty-five gauge German silver wire was used as "interlacing wire," to fix the arch wire to the teeth. The arch wire was fixed to each tooth in the upper arch, from the first molar on the left side around to the corresponding molar on the opposite side. The interlacing wires were passed between the teeth above the contact points, one end being brought out below the arch wire, the other end above it. The ends of the

wires were then twisted together and a pair of haemostatic forceps was used to tighten these, care being taken to draw the ends of the wires away from the tooth, thus avoiding breakage. Final tightening of the wires was not done until all the wires were in position. A small pair of curved haemostatic forceps was used to guide the ends of the interlacing wires through the interproximal spaces. The ends of the twisted wires were cut rather short, and then bent to form a small loop, the end being tucked under the arch wire. The lower arch wire was fixed to the lower teeth in a similar manner, the wires passing through the interproximal spaces below the contact points.

Double thicknesses of interlacing wires were used as reduction wires. The reduction wires were passed under the arch wires in chosen positions, so that when force and tension were exerted upon them the teeth would be brought up into their proper occlusion and the fractures reduced. (All the reduction wires should be in position before final reduction is made.) On tightening the reducing wires, the teeth came into occlusion. The ends of these wires were carefully bent, in order to prevent irritation.

The patient was advised to keep his mouth as clean as possible. A 50 per cent solution of stock hydrogen peroxide is a good mouth wash. A small tooth-brush may be used to good advantage, to prevent the collection of debris about the wires. Pledgets of cotton saturated with hydrogen peroxide should be rubbed over the teeth and mucous membranes twice daily in such a case.

The lower cuspids being conical in shape, the interlacing wires on these teeth became loose in the course of a day or two and were removed. The removal of these wires did not affect the stability of the lower arch wire. Five days following reduction the patient experienced more swelling, accompanied by pain at the angle on the left side. He was advised to apply hot moist compresses over this area and to use a warm mouth wash. The swelling was greatly reduced by the following day. On February 18th the reduction wires were cut and the case studied. The patient was able to open his mouth about one half inch after practising a few minutes. Gentle massage was given to the fractured areas. Some of the interlacing wires were tightened and the reduction wires again replaced. On February 28th the splints were removed, and the patient was cautioned against using his jaw too vigor-

ously Following removal of the splints, more swelling appeared at the angle of the jaw and the glands in the side of the neck felt hard on palpation. A small quantity of pus could be expressed from the gingival crevice, just anterior to the second molar. Hot moist compresses were applied to this area until fluctuation could be detected, and then extra-oral drainage was obtained. The wound drained for six days and then healed. Since that time the jaw has been functioning normally and the patient has had no discomfort.

DISCUSSION

This case is particularly interesting on account of the impacted lower left third molar. Local predisposing causes of fracture of the mandible are usually tumours of bone, such as sarcoma or carcinoma, or, even more often, cysts, osteomyelitis, or gumma, but in this case it was an impacted molar.

Before attempting reduction here, one had to decide what should be done with regard to this impacted tooth. The common rule is to remove teeth in the line of fracture. In order to remove this tooth some of the bony tissue overlying the tooth would have had to be removed. This would have meant weakening the short fragment, and would also have caused considerable trauma to the tissues. This tooth could not have been removed without getting more infection into the wound, which would have interfered with healing. If the roots of the impaction had been lying in the line of fracture, the shock would possibly have caused the nerve of the tooth to die, and the tooth would then have had to be removed. Loose teeth or roots in the line of fracture should always be removed. (Removal of this impacted tooth has been advised and will be done about six months later.)

Nearly all fractures of the jaw are compound, hence usually become infected. Hot moist compresses applied to the outside tend to combat the infection or cause it to localize. The abscess should be opened as soon as fluctuation can be detected. This is most satisfactorily accomplished under nitrous-oxide anaesthesia. A general anaesthetic should never be given with the reduction wires in position. A small incision should be made in the skin, and then a blunt dissection down to the periosteum made with a pair of scissors. A few thicknesses of sterile rubber tissue placed in the wound will insure good drainage. Although the fracture at the angle in

this case was thought to be "simple," it no doubt became infected by seepage of saliva into it by way of the gingival crevice around the second molar. A culture taken from around the crown of an unerupted tooth, such as this, always shows the presence of a mixed type of infection. Slight swelling usually persists in these areas for a few months, and it is advisable to inform the patient of this fact.

Anyone who has not seen fractures treated by this modified method of Gulmer's might think that the interlacing wires would cause considerable trauma to the gingival tissue. This is not the case, and it is surprising to see how little irritation the wires cause. When the reduction wires are tightened, they tend to draw the arch wires toward the occlusal surfaces of the teeth and hence the interlacing wires away from the gingiva. If the ends of the wires are carefully bent and tucked under the arch wires, the lips and buccal membranes will not be irritated. If one is afraid of this, dental compound may be used to round over these ends.

Whenever there are a few sound teeth in the opposing jaws, this method, in my estimation, is the most satisfactory. These splints are easily placed in position, whereas the patient is caused much discomfort in taking impressions in order to make either swaged or cast splints. With this method of wiring it is possible to study the occlusion of the teeth at all times, as there is no thickness of metal between the upper and lower teeth. The method also saves the patient money, and, as most fractures of the jaw occur in the poorer classes, this fact should be taken into consideration. In cases of nausea or sickness the reduction wires may be easily cut, the mouth opened and again reduced. If one or two interlacing wires should break, they may be ignored, whereas with other methods of wiring they must be replaced.

About 1 per cent of all fractures recorded are of the mandible, while about 0.5 per cent are of the maxilla. This case is a common type of fracture, as the point of impact of the breaking force was situated midway between the two points of fracture. When there is a fracture at the angle, the break is usually anterior from below upward, and at an angle of about 60°. The mandible is almost as frequently fractured in two places as in one place only, the fractures usually occurring on opposite sides. Fracture of the mandible most frequently occurs in the mental region. The bone in this area is weakened to a certain extent by the mental foramen and also

by the peculiarly attenuated internal structure of the bone at this point. This position is also the middle of the curve in the body of the jaw. Other common sites are (1) the angle of the jaw, (2) between the angle and mental foramen, (3) symphysis menti, (4) ramus, (5) condyloid process, (6) coronoid process.

It is never necessary to extract, to provide space for the passage of food in the case of a patient wearing interdental splints or where the upper and lower teeth are wired together. Fluids and soft foods may always be taken either through places where teeth have previously been lost or behind the last molar. On the day following reduction, this patient reported that he could take fluids, and that he had no trouble in taking cream of wheat, mashed potatoes, ice cream, etc. He was able to talk and had no difficulty making himself understood, and was only away from his work for a few days. These patients usually lose a few pounds of weight the first few days after reduction, but ordinarily regain it within a week or two.

There is usually little difficulty in making a diagnosis of fracture of the mandible, but this is greatly facilitated when there are considerable teeth present, as malocclusion is one of the best clinical signs. Extra-oral skiagrams should always be taken of both sides of the mandible, as frequently with a fracture of the body of the mandible one finds a fracture of the neck of the condyle on the opposite side.

Union in healthy patients should occur between thirty and forty days and always more promptly when the fragments are brought into proper juxtaposition and so retained.

TWO CASES OF HYPERVENTILATION TETANY

BY J. R. MONTEITH, M.D.

Demonstrator in Medicine

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In 1920 Collip and Backus in Canada,¹ and Grant and Goldman² in the United States, described the experimental production of a tetany in normal man by prolonged forced breathing. Since that time this type of tetany has been thoroughly studied and there is practically

unanimity of agreement that it is associated with an alkalosis, traceable to the excessive lung ventilation and resulting depletion of carbon dioxide from the alveolar air and from the blood. Blood calcium, instead of being below normal as in the tetany of parathyroid deficiency, is either normal or slightly increased.^{2, 3, 4, 5}

Such a "hyperventilation" tetany occurring under clinical conditions has been but seldom reported. The few cases in the literature each present their own peculiar features. It seems desirable to report every recognized case until such time as the possible variations in the causative agencies of this particular type of tetany are fully realized.

Barker and Sprunt's case,⁶ the first reported, is summarized in its title "A spontaneous attack of tetany during a paroxysm of hyperpnœa in a psycho-neurotic patient convalescent from epidemic encephalitis." Goldman⁷ described four cases in which definite manifestations of tetany were present, and two others which showed suggestive symptoms. The increased respiration in these four cases was associated with, respectively, cholelithiasis and cholecystitis, exercise following nausea due to indigestion, a neurosis associated with crying spells, and influenza followed by abdominal symptoms of questionable origin. Goldman also mentions the occurrence of definite symptoms in five college students following a class fight, these students were in poor physical condition. Pagniez, Leroud, and Lebel⁸ report a case of tetany following retention of urine, due to irritation, which set up prolonged groaning, following administration of uroformine for a previous gonorrhœa.

In all these cases the actual tetanic manifestations were preceded by a definite and prolonged hyperpnœa. The causes leading to this hyperpnœa varied. With these clinical cases can be perhaps closely compared the experimental production of tetany through hyperpnœa following prolonged immersion in hot baths, as in the experiments reported by Landis, Long, Dunn, Jackson, and Meyer.⁹

In this paper two more clinical cases are reported, the first a patient of Dr. Charles Hunter, Professor of Medicine, and the second a patient of Dr. A. J. Burridge, Associate Professor of Clinical Medicine in this University. To both Dr. Hunter and Dr. Burridge we tender our thanks for permission to publish these records.

CASE 1

Mrs P, aged 32, was admitted to the Winnipeg General Hospital on January 20, 1928, because of pains in the lower abdomen, "heart attacks," and "weakness and tiredness."

The pertinent features of her history are slight abdominal discomfort, (worse during menstruation) which commenced in 1917. During her first pregnancy (1921) prolapse of the uterus occurred, which increased after the birth of a normal child, the discomfort bordering on pain. A second childbirth (1923) accentuated both pain and prolapse. A repair operation (1924) afforded partial relief. For six months before admission to hospital indefinite lower abdominal pain, increasing backache, and a "dragging down" feeling in the pelvis, suggested to the patient a recurrence of the prolapse.

The history of tetany probably commenced in September, 1925, with a "heart attack," the first of a series, initially a week apart, but gradually increasing in frequency to one on alternate days. These ceased in February, 1926, but recommenced and ran a similar course from November, 1926, to February, 1927, and again from December, 1927 until admission to hospital. Glycosuria was reported in December, 1925, and the patient was kept on a rigid diet until October, 1927. There is no present evidence of diabetes.

The patient's description of these attacks accords well with subsequent accurate observations. She reported a sensation of "fluttering" of the heart, followed within a few minutes by a numbness of hands, feet, and head, which travelled towards the trunk. Then followed shortness of breath, "gasping," and a few minutes later the hands and feet became stiff. The attack lasted from a few minutes to one and a half hours. It passed off gradually, there remaining an aching pain in the muscles of legs and arms, a feeling of tiredness, and an increase in pelvic pain sometimes severe enough to keep her in bed for two or three days. During the attack she was forced to lie down, though never falling, and never losing consciousness. No involuntary movement of the bowels or bladder occurred. The "attacks" were started by such trivial causes as washing dishes, stooping, climbing stairs, and have even occurred while she was in bed or resting in a chair. Usually no treatment gave relief, although during a severe attack which occurred just before she left for hospital some relief was obtained by administration of chloroform by her local doctor.

Her personal history revealed nothing pertinent.

Condition on admission.—Gynaecological condition (Dr D S Mackay), laceration of perineum with prolapse of uterus, dragging down of ovaries and pelvic congestion. No other positive findings.

Urine analysis on admission, cloudy, acid, sp gr 1.018, a very faint trace of albumen, sugar absent, a few pus and epithelial cells present. A very similar report two days later. A microscopical blood examination revealed nothing abnormal. The basal metabolic rate was +4 per cent.

Hospital History.—On the third day in hospital (January 23rd) the patient had a mild attack of tetany witnessed and accurately described by a nurse. It lasted between 10 and 15 minutes. Examination shortly afterwards showed a positive Chvostek's sign on the right side, and Trousseau's sign was positive with both arms within two minutes although Poole's phenomenon could not be elicited. Blood was taken six hours after this attack. The serum calcium was 9.5 mg per 100 cc.

On January 25th she slept well till 4 a.m., awakened with a frontal headache not severe enough to disturb her, had her usual breakfast at 8 a.m., and felt fairly well. At 9 a.m., while sitting in a chair waiting for her bed to be made, the usual preliminary symptoms of her attacks commenced, she was helped back to bed at 9.05, and numbness of the hands, wrists, and lower extremities half way to the knee began, followed rapidly

by stiffness of hands and legs. Drs Hunter and Monteith watched this attack from 9.15 a.m. till it ceased at 9.25.

She was conscious and quite emotional. Her breathing was very deep and gasping throughout, at first forty per minute, it increased within three minutes to sixty per minute. (The emotion and the breathing could be controlled by getting her to answer questions, which led Dr Hunter to the opinion that the attack could have been shortened, or at least controlled, by strong mental suggestion.) The heart rate was 80 to 90 throughout the attack.

The "accoucheur hand" was present, the feet were dorsiflexed, and the knees extended, with slight rigidity. At the height of the attack the head was drawn back and the face assumed a typical tetanoid appearance. The numbness disappeared with the attack itself, though the hands maintained a tendency to unnatural stiffness and position for the following half hour.

Chvostek's sign was markedly present throughout the attack (all branches of the facial nerve showed hyperexcitability), it could be elicited for the following twenty-four hours. Subsequently it was uncertain. Trousseau's phenomenon was markedly present throughout the day, and definite all the succeeding day. Poole's arm phenomenon was questionable, the leg phenomenon could not at any time be elicited.

Blood taken at the height of this attack had a serum-calcium value of 10.1 mg per 100 cc.

The patient stated that this was a mild attack. A few days later she had a very mild attack, not seen by a doctor. It passed off quickly. Trousseau's sign could be elicited afterwards, but the Chvostek sign was uncertain.

On February 4th, Dr D S Mackay operated, repairing the pelvic floor. The anaesthetic was taken extremely well and she made an uninterrupted and uneventful recovery. During this recovery period she experienced the preliminary phases of these attacks but they were easily controlled. Dr Hunter stopped one attack immediately by using mental suggestion. The nature of the attack was explained to her, and she was told that she could prevent it herself by controlling her breathing. She then found that whenever the preliminary "fluttering" of the heart became noticeable she could prevent any subsequent development by deliberate breathing control.

She was discharged from hospital on February 29th. At this time a 24-hour specimen of urine showed no trace of albumen.

In the last week of March there was some recurrence of abdominal pain, with the initial symptoms of tetany, coincident with onset of the menses. By control of her breathing she has been able to prevent these attacks reaching the stage of stiffening of the extremities, and although when she was last heard from (May) the attacks still recurred from time to time, she appears to be gaining increased control of them.

CASE 2

Mr K, Hebrew, aged 28, was admitted to the Winnipeg General Hospital on May 17, 1928, for examination.

History.—For several months he had experienced a feeling of fullness after meals, flatulence, and an inability to digest a fatty diet. On April 4th last, while driving his car, he felt a sharp needle-like pain in the epigastrium, which travelled upwards. He then had difficulty in breathing, deep rapid respiration set in, and this was followed within a few minutes by stiffening of the hands and feet, these extremities, from his description, behaving as in a typical tetanic spasm, while his face became contracted towards the right. The attack lasted between five and ten minutes, then the pain ceased, next the breathing became normal, and finally the spasm ended.

After ten days precisely similar attacks occurred,

and he was averaging about one a day when admitted to hospital. For two days before admission he had a steady dull pain in the epigastric region. During this period he saw Dr Burrige, who sent him to hospital for examination.

Hospital history—The essential features, from the standpoint of this paper, were as follows. Two or three typical attacks occurred during his stay in hospital. During the first, studied closely by one of us, he exhibited the "accoucheur hand," feet dorsiflexed, positive Trousseau and Chvostek signs, and presence of Poole's phenomenon (both arms and legs), while a sample of blood taken during the height of the attack gave a value for serum-calcium of 11.3 mg per 100 cc. The attacks were all preceded by pain, and immediately preceded by rapid deep breathing. They usually lasted ten minutes or less.

General examination was negative. A barium series gave negative results. A gall bladder test (Graham's method) gave faint visualization in sixteen hours. From the previous history of digestive disturbance and the gall bladder visualization test, together with the above study of an attack, Dr Burrige made a tentative diagnosis of cholecystitis, complicated by hyperventilation tetany.

It was explained to the patient that the tetany could be prevented by control of breathing. He was discharged from hospital on May 26th.

DISCUSSION

The first case is that of a tetany following lung hyperventilation arising from the continued discomfort of the pelvic condition, accentuated by various minor factors.

The second case is that of a tetany following lung hyperventilation set up by pain, probably due to cholecystitis, and thus resembling one of the cases reported by Goldman.

Education of the patient as to the cause of the attack, and the possibility of arresting it by control of breathing, seems indicated as a satisfactory form of treatment.

Although tetany following lung hyperventilation has been so rarely reported in the literature, yet, especially since several of the cases actually reported have been only single transient attacks, it seems just possible that a more careful watch for them may indicate that tetanic attacks of this type (especially slight ones) may be in reality not so uncommon.

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A FATAL CASE OF MUMPS

By G. G. LECKIE, M.D.

Lucky Lake, Sask.

The following case is reported chiefly as a warning to any who may be inclined to treat parotitis of the epidemic variety as a disease void of any danger.

An epidemic of parotitis prevailed at the time, practically all susceptible children in the neighbourhood were attacked, yet they did not complain except for one or two days at the commencement of the infection, and would not remain in bed longer.

CASE REPORT

A farmer, aged 42, in the best of health previously, he had never been ill except with children's diseases.

He was first seen on January 10th, when he had a slight unilateral swelling, with fever, and malaise. A diagnosis of mumps was made.

On the 21st he was seen again, and then complained of weakness of the arms and legs. He said he had remained indoors since I had seen him, except the day before, when he had gone only as far as his barn, but had to return because he felt weak. On returning to the house he could not raise his arm to hang his coat or hat on a peg, and was helped to the bedside.

On examination, the swelling which he said had been very marked, extending down his neck and even over the clavicle on the one side, had not entirely subsided. The temperature was normal, pulse rate, normal, knee-jerks, sluggish, the plantar reflex, not elicited, the abdominal reflex, present, arm reflexes could not be elicited.

The following day he was no better.

On the 23rd I again examined him. Now he could not raise his legs or arms at all, yet he could move his fingers and hands freely. He lay quite helpless. Knee-jerks, absent, Babinski reflex, present, abdominal reflex, absent, temperature and pulse, normal.

On the 24th, he was as above, but complained of dryness of the tongue and throat, slight difficulty in articulation, and had dysphagia and dyspnoea.

The same day, eight hours later, he could speak only in a whisper. His breathing was thoracic entirely, with increasing cyanosis. Finally, artificial respiration revived him for

two hours, when he died of asphyxiation, conscious until artificial respiration ceased

The diagnosis of acute ascending paralysis, complicating mumps, was made.

LYMPHOID LEUKÆMIA AND TUBERCULOSIS*

BY J FEIGENBAUM, M.D.,

Montreal

A rather unusual case of lymphoid leukæmia with several interesting features was recently observed on the Medical Service of the University of Michigan Hospital. The following is an excerpt of the history, physical examination laboratory and necropsy findings

G E J, (No 185483), male, aged 56, labourer, was admitted to the hospital on December 24th, 1927, complaining of "lumps in the neck," a failing appetite, loss of weight, weakness, and pains in the abdomen. The patient dated the onset of this illness one year ago, December, 1926, when he noted two lumps in the upper part of the neck. Three months later, similar masses appeared in the various lymphadenoid situations of the neck. These masses were at first painless and hard, but subsequently, certain of them softened and ultimately broke down, discharging a thick creamy material. A thin discharge then continued for one to two weeks, when the opening in the skin closed. This was not invariably the course of events, however, and a sinus with its mouth over the episternal notch had oozed intermittently for six months. Weakness was so marked for six months that it entirely incapacitated the patient. Emaciation was progressive and a loss of fifty pounds in weight had occurred. On July 1, 1927, the patient was seized with severe, colicky pain in the abdomen, which subsided after a few days, but returned about the middle of December 1927, to recur persistently after taking solid food or fluids. Associated with this pain there was diarrhœa. During an interval of four weeks, in the summer of 1927, deep jaundice was present. For one month before admission the patient suffered from a moderately productive cough, with hoarseness. Weakness had been marked for six months, and anorexia had been present ever since the beginning of the patient's illness. Dysuria occurred on several occasions during the period of ill health.

Physical Examination—On admission the patient showed a temperature of 99.4 degrees F, a pulse rate of 104 per minute, and respirations 28 per minute. A hypotension of 90/50 was present. Emaciation was pronounced, and the patient appeared acutely ill when he was first observed. There was a well marked arcus senilis. The lips were pale, the tongue, buccal mucous membrane, and the palate were abnormally dry. The tonsils were moderately enlarged. The neck presented the most puzzling findings of the whole physical examination. An elongated swelling was visible along the anterior border of the left sterno-mastoid, and a round mass about the size of a walnut above the sternal end of the right clavicle. Fluctuation was obtained over both of these. Two scars, evidence of old sinuses, were present on the left side of the neck while at the right base of the neck there was an open, ulcerating, indurated and painful surface, about the size of a quarter. The posterior cervical lymph nodes on both sides of the neck

were as large as marbles. They were tender, matted together, and adherent to the subcutaneous tissues, though the skin over the nodes was perfectly free. The right axillary as well as the epitrochlear and inguinal lymph nodes on both sides were slightly enlarged. Over the right supraspinous fossa an impaired percussion note was obtained, with accentuated breath sounds over this area and over the first right interspace and interscapular regions. The heart sounds were distant. The abdomen was distended, and diffuse tenderness made palpation unsatisfactory. Rectal examination was extremely painful, but revealed no further abnormalities. Cyanosis of the nail beds was well marked.

Laboratory Examinations—The urine showed a very faint trace of albumen. A negative blood Wassermann reaction was obtained. The blood picture revealed red blood cells, 4,060,000 per cmm., white blood cells, 89,400 per cmm., and hæmoglobin 42 per cent (Sahli). White blood cell counts of 64,500, 105,500, and 85,800 per cmm. were obtained on three subsequent occasions. The differential blood count was interesting, polymorphonuclear neutrophils 2 per cent, small lymphocytes 4 per cent, large lymphocytes 3 per cent, and monocytes 91 per cent. The red blood cells were pale, round, and they showed marked anisocytosis (Fig 1). A few normoblasts were found. Some phagocytic monocytes were noted in the blood film, and several hæmohistioblasts of the monocyte or lymphocyte series. An examination of the stool showed a faint trace of occult blood. Aspiration and culture of the fluid from the cystic swelling over the sternal end of the right clavicle yielded a growth of *S aureus*. This was probably the result of a contamination, because a later culture from the same source remained sterile. The blood non-protein nitrogen content was 58.4 mgm per cent. A roentgenogram of the chest revealed several Ghon's tubercles in the left lower lung field.

Course in the Hospital—The patient's condition on admission was very poor, and became progressively worse during the few remaining days of his life. He was very uncooperative, and during the last three or four days delirium supervened. There was a troublesome diarrhœa for one week preceding death. The temperature during observation ranged between 97 and 100 degrees. On January 2, 1928, signs of consolidation became evident over the right lower lobe of the lungs. The patient then lapsed into coma, and died a few hours after this.

Autopsy—(2539 A 122 AF) The external examination as recorded in the autopsy protocol did not disclose anything not already given under physical examination.

The spinal cord, brain and meninges showed no abnormalities. Old calcareous foci were present in the left upper lobe of the lungs, with adhesions about the apex of the right lung and caseous tubercles in the lymph nodes at the hilum. There was a marked hypostatic congestion of the right lower lobe of the lungs, probably terminal. A complete synechia cordis was found, while the heart itself showed no striking changes. The thickened omentum presented many nodules varying in size from a pin point to a pea, and was adherent to coils of small intestine. The edge of the liver extended 16 cm below the ensiform cartilage, the spleen was slightly enlarged. Tubercles studded the peritoneum, the spleen, and the intestines. The mucous membrane of the transverse colon showed ulcerations in its circular axis. Two small ulcers, one-half centimetre in diameter, were present in the duodenum, one, just beyond the pyloric ring and the other, four cm below the pylorus. On the lesser curvature of the stomach there were two ulcers, penetrating through the wall of the stomach, and leading into a large mass of pancreatic tissue behind. The peri-pancreatic lymph nodes were enlarged, and several were soft and necrotic. The mesenteric lymph nodes were also enlarged and contained tubercles and small abscesses. An occasional tubercle was seen on the surface of the liver. The bone marrow was soft and light red in colour.

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Microscopically, leukæmic clots were visible in all the blood vessels. The spleen showed leukæmic metaplasia, with numerous large caseating tubercles. The mucosa, submucosa and subserosa of the entire alimentary tract had become involved in the leukæmic process. Sections showed this to be the case also in the omentum, pancreas, liver, gall bladder, adrenals, kidneys and urinary bladder. A marked chronic interstitial inflammation was observed in the pancreas, with non-tuberculous sinus tracts traversing that organ. Tubercles were demonstrated in the liver, kidneys, and retroperitoneal lymph glands, while the mouth of the sinus in the neck showed tubercles in pyogenic granulation tissue. The bone marrow had undergone lymphoblastomatous metaplasia.

COMMENT

As has been seen, this case presents many unusual findings both from the clinical and the pathological side. The striking fact is, of course, the association of a leukæmia with widespread tuberculosis. The co-existence of the two diseases has been recognized for a long time, and has been noted by various authors. Thus Osler¹ in his text-book says that tuberculosis is not an uncommon complication of leukæmia, and cites Dock,² who collected twenty-seven cases from the literature. Many of our observers, however, stress the frequent occurrence of tuberculosis in myeloid leukæmia, but fail to mention its incidence in lymphoid leukæmia. Karl Vogel,³ in his discussion of the complications which are met with in the leukæmias, intimates that tuberculosis is frequently present in the myeloid variety, but passes over its occurrence in the lymphoid type. Nanta⁴ has gathered thirty-seven cases from the literature and added observations from one of his own cases, in whom both myeloid leukæmia and tuberculosis were present. Only passing reference is made in this review to the association of lymphoid leukæmia and tuberculosis. Ordway and Gorham,⁵ while pointing out the etiological relationship which is supposed by some to exist between these two diseases, dismiss the subject by stating that "the actual co-existence of tuberculosis and leukæmia is rare." Richard Cabot⁶ maintains that tuberculosis is not uncommon as a complicating factor in lymphatic leukæmia. R. R. Dieterle,⁷ in 1916, reported a case from the pathological department of this clinic which bears a remarkable similarity to the one recorded above. The autopsy brief of Dieterle's case states in part "chronic lymphatic (mixed lymphoid myelogenous) leukæmia, primary tuberculosis of the cervical glands, acute miliary tuberculosis of all organs, includ-

ing the skin, multiple lymphomata of kidneys and liver, leukæmic infiltrations of the gall bladder and intestine." P. Emile-Weil and Coste⁸ cite a case in a male of 26, whose chief complaints were fever, cervical adenopathy, and a tendency to hæmorrhage. This man's white blood cell count was 54,000 on admission, but rose later to 90,000. At the onset, the whole picture was that of a myeloid leukæmia, but later it assumed the form of a lymphoid leukæmia. From their description, however, the myeloid leukæmia probably developed into the myeloblastic type, which is often confused with lymphatic leukæmia. Lymphomatous infiltration of the hæmatopoietic organs with miliary tuberculosis was disclosed at the post-mortem examination.

The blood smear in the present instance offered material for an interesting study. As will be remembered, the majority of the white blood cells were of the mononuclear variety (91 per cent). Many of these were large cells having circular deeply staining nuclei and a lighter staining cytoplasm, with numerous small basophilic granules sprinkled throughout. Such cells have been classified in the lymphatic series and have been seen in cases of acute lymphoid leukæmia.⁹ This lends some support to the impression that the patient, when seen here, was suffering from an acute exacerbation of a chronic lymphoid leukæmia. The majority of the mononuclear cells were of a different variety and consisted almost entirely of large nuclei, usually notched, with chromatin more deeply staining than that seen in mature lymphocytes. A tiny segment of cytoplasm opposed to the nuclear indentation completed the morphology of these cells. Lymphoblasts are larger cells and have a more abundant cytoplasm. It is obvious that the blood picture *per se* was not entirely characteristic of lymphoid leukæmia. Landon¹⁰ believes that a diagnosis of lymphoid leukæmia should be made only with caution in the presence of a mononucleosis even with a marked leukocytosis. He reports two cases in confirmation of this view, in one the diagnosis proved to be infectious mononucleosis, and in the other an acute form of pulmonary tuberculosis.

Another feature of interest is the presence of a virulent form of tuberculosis in the presence of an excess of lymphocytes—the type of cell

which is usually associated with immunity in tuberculosis. It is suggestive that the so-called lymphocyte of lymphatic leukæmia is not identical with the normal lymphocyte of the circulatory blood, but bears the same relation to it as does the cancer of the breast cell to a normal cell in the breast tissue.

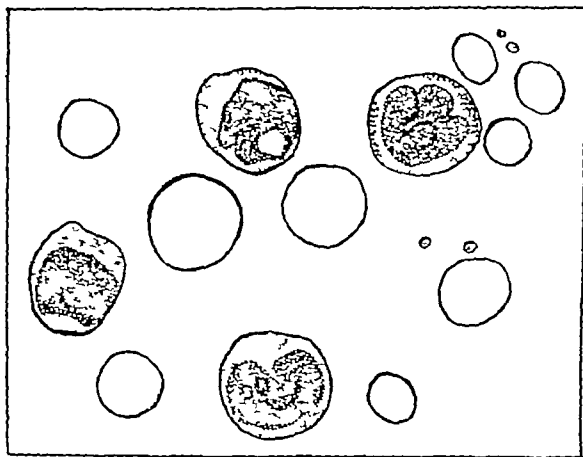


FIG 1—Oil immersion field of blood film showing atypical monocytes. The red blood cells show definite anisocytosis. (Camera lucida drawing)

The diagnosis in this case was obscured considerably by the necrosis which had occurred in the lymph nodes of the neck. So far as could be ascertained, there is no reference in the literature to breaking down nodes in lymphatic leukæmia. Indeed, the sinus tract in the neck, together with the sterile culture obtained from the necrotic mass, suggested rather strongly a tuberculous process in the lymph nodes.

The multiple non-tuberculous ulcerations met with in the stomach, duodenum, and colon presented another problem for explanation. It is probable that these ulcers did not exist prior to the patient's final illness, as there was no history of gastro-intestinal disturbance before his illness. While gastric and duodenal ulcers may be symptomless, ulcers of the colon seldom are. It is very likely, then, that the defects in the mucous membrane observed at autopsy followed the leukæmia. As has been seen the widespread lymphoid infiltration did not spare the mucous membrane of the gastro-intestinal tract, and it is quite possible that the chemical

and mechanical irritation of the digestive juices and food succeeded in producing death in tissues which had become *loci minoris resistentiæ* (infiltrated with lymphoid cells).

The reason for tuberculosis following upon a leukæmia seems obvious. The ability of the body to cope with infection is reduced by a chronic illness, leukæmia. Tubercle bacilli which have been encapsulated and dormant for years become active, and a dissemination of the bacilli produces miliary tuberculosis. It is interesting to note that at one time this case might have been cited as proof for the tuberculous etiology of the leukæmias, in spite of the distinct microscopic pictures produced by each disease.

SUMMARY

- 1 A case is reported of lymphoid leukæmia co-existing with tuberculosis.
- 2 Attention is drawn to the few references of this combination of diseases in the literature.
- 3 The atypical blood picture in this case, together with certain clinical features, suggested two diseases rather than one.
- 4 The lymph node of lymphatic leukæmia apparently never breaks down, unless secondary infection has taken place in it.
- 5 The occurrence of tuberculosis in lymphatic leukæmia can best be explained by regarding the tuberculous process as an expression of lowered resistance in the patient.

My thanks are due to the pathological department for permission to make use of the autopsy record and to Drs C C Sturgis, H Field, and R Isaacs for their kindly advice.

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Editorial

THE ANNUAL MEETING AT CHARLOTTETOWN

THE Canadian Medical Association held its annual meeting this year at Charlottetown, P E I. This was the 59th annual convention since its foundation in 1867, but it was the first time the Association had come to "The Island". If, however, the success of this meeting is to be a sufficient precedent, this site has gained a permanent place in the list of those to be considered in other years.

What makes for the success of such gatherings? The place of meeting may have peculiar attractions of its own, there may be large numbers in attendance, the occasion may be marked by the announcement of great developments in medicine. But one cannot expect all these conditions, nor would it be anything but an unnecessary and invidious task to try to apportion them to each occasion. What, above all, must preside at a meeting of this sort is the spirit of hospitality, and how strongly it was in evidence at the Charlottetown meeting will not readily be forgotten, especially by those seeing Prince Edward Island for the first time. The natural beauty of the island, the excellence of the program, the evident enthusiasm of those in attendance, all contributed to a sense of success, but one's memory will longest retain the warmth of welcome and the continual entertainment which was so whole-heartedly offered by what seemed to be the entire population.

Those who planned this meeting could not have had a happier inspiration than that of chartering a steamer for those from Quebec and western points. The S S "New Northland" carried but a small proportion, it is true, of those attending the convention, but they were representatives of every province from Quebec to the Pacific Coast, and before the cementing influence of the convention itself began, the association on board had gone far in the establishment of cordial friendships and understandings. In Charlottetown, too, the boat became a centre of interest and entertainment, enabling

the ladies of the party to return in some degree the hospitality shown them in such good measure by the hosts and hostesses of the Island. In future, no convention should be considered complete without some such introductory boat trip!

Two full days were taken up with meetings of the Council, and the volume of business transacted might easily have encroached on even more time if the chairman had been one of less experience and firmness. In this Parliament of the Association there is much to be learned, and not least the principle of consideration for the opinions of all its diverse members. There can be few other medical Associations whose various parts possess such varying characteristics and problems as the provincial daughter societies of the Canadian Medical Association. There certainly can be no other Association in which these minor differences are more successfully harmonized. How wise a suggestion it was that henceforth one or more of the most recent graduates should each year be appointed to sit on the Council to follow its deliberations. The work of the Association itself is naturally of a specialized order, and demands men trained in administration, but no better demonstration of its functions could be given, and in no quarter where it would be more effective, than by some such plan as that mentioned.

One must be impressed by the variety of objects in which the Association is interested, and by the progress attending all that it takes up. What does the future hold for it? Judging by the confidence and zeal of its members, only the best things, those most nearly approaching its ideals. But that cannot be all. Full of vigour and promise as the Association is, it still will meet its difficulties and troubles. This thought was well expressed by one member,* who saw in this particular meeting something of a pause for the gathering of new strength.

* Dr G H Murphy

It was as if the Association, with all its achievements behind it, and its hopes and plans before it, had withdrawn to one of the most quietly beautiful parts of Canada, not attempting to bring together great numbers, nor to celebrate any special scientific

advance, but chiefly to regain that impetus which its work will demand of it in steadily increasing measure. Is there any other place in Canada from whose historical associations there could be derived a keener stimulus to unity and high purpose?

PUERPERAL SEPSIS

WE are publishing in this issue an abstract of an address by Dr James Young, of the Edinburgh Royal Maternity Hospital, delivered before the Edinburgh Obstetrical Society, on Maternal Mortality from Puerperal Sepsis, a subject which is engaging much thought in the profession both in Great Britain and in America, and deservedly so. In Canada attention has been called to the unnecessarily high mortality connected with maternity practice, especially in the outlying districts of our several provinces, and the statistics elicited by the recent questionnaire of Dr Helen MacMurchy present an urgent problem to our profession.

In Great Britain, the Council of the British Medical Association, recognizing the need for investigation, appointed in 1924 a special committee to enquire into the causation of the high puerperal morbidity and mortality. In its report this Committee calls attention to many possible factors of which our knowledge is defective and on which experimental research is necessary. Undoubtedly, all hospital records point out the increased evidence of morbidity which arises from unnecessary intervention, and to the fact that the morbidity risk increases the higher up in the genital tract the manipulation extends. In an editorial on this subject, the *British Medical Journal* makes the suggestion that while an increase may have taken place in the number of skeletal defects in mothers, resulting from the survival of many rachitic children who, owing to imperfect care, would have succumbed in the past, nevertheless, the important change which has taken place in the child-bearing women of to-day is the peremptory call for the relief of pain and the shortening of the period of travail by means of anæsthetic drugs and the forceps. Medical

attendants are chosen largely from those who will afford this relief, and accoucheurs have to steer the difficult course between the strongly expressed desires of their patients, associated with the urgent demands of other branches of work, and what they may recognize as the safe course to take.

Dr Young in his address insists on the need of educating the public to the realization that at the present a price must be paid for the relief which the parturient mother in so many instances imperiously demands, and pleads for the importance of securing, so far as may be, practicable natural delivery. The statistics he presents are worthy of careful thought by the profession, and the suggestion of team work between doctor and trained midwife would appear in many respects to be a valuable one.

The preliminary report by Dr Burt White of his investigations on the varying resistance of puerperal women to streptococcal vaccine appears to indicate that those who react to this toxin are more liable to puerperal fever than those who do not,—an interesting fact which may prove valuable. His experiments may be briefly summarized as follows. In an investigation of 100 pregnant women 27 proved sensitive to a dose of scarlatinal toxin, 1.5 c.c. of a dilution of 1 in 1,000 strength. Eight, or 30 per cent, of these sensitive women experienced a morbid puerperium, though labour was altogether normal. Seventy-three gave no reaction, of these, two had a morbid puerperium, but in neither of them could streptococci be found in the cervix or in the blood. Thirteen of these non-reacting women sustained difficult labour but had a satisfactory puerperium, and in no instance did the bacteriological examination reveal the presence of *streptococcus pyogenes*.

His inference was that women who react positively to intradermal inoculation of scarlatinal toxin are more liable to develop puerperal sepsis than those who do not react. The comment in the editorial in the *British Medical Journal* is to the effect that,

once knowledge of this kind has been definitely established, and it becomes possible not only to pick out those in whom the power of resistance is low but in the pre-natal period to raise the resistance, the risks of artificial aid may be greatly lessened

ALEXANDER GORDON OF ABERDEEN

IN connection with the above we note the very charming reference to the brochure by Alexander Gordon of Aberdeen, entitled "A Treatise on Epidemic Puerperal Fever in Aberdeen," published in 1795, which appears in the *American Journal of Obstetrics and Gynecology*, February, 1928, from the pen of Herbert Thoms, of New Haven, Connecticut.

Alexander Gordon was born in 1752, took his degree of M A at Marischal College, Aberdeen, and began the study of medicine first at Aberdeen Infirmary, but later on in Edinburgh. He joined the navy as surgeon's mate in 1780, and two years later obtained the rank of surgeon. In 1785 he retired on half pay and came to London, where he became a resident pupil at a lying-in hospital, and attended lectures on midwifery by Denman and by Osborn. He afterwards attended lectures at Westminster Hospital. After this training he returned to Aberdeen and obtained his degree of M D. Shortly after, he was appointed physician to the dispensary, and obtained an excellent reputation and a large practice in which he devoted himself chiefly to obstetrics. Four years before his death he was again summoned by the Admiralty for active service in the Navy, but speedily developed tuberculosis and was invalided home. His death took place in 1779 when he was forty-seven years of age. The *British Medical Journal*, June 9, refers to Dr Thoms' article as follows —

"Dr Thoms cordially agrees with A W W Lea, who maintained that Gordon was to be credited with having first clearly demonstrated the infectious nature of puer-

peral fever. Oliver Wendell Holmes was so much impressed with Gordon's treatise that in his essay he quoted the following paragraph in capital letters: "By observation I plainly perceived the channel by which it was propagated, and I arrived at that certainty in the matter that I could venture to foretell what women would be affected with the disease, upon learning by what midwife they were to be delivered or by what nurse they were to be attended during their lying-in, and almost in every instance my prediction was verified." With extraordinary honesty Gordon continues: "It is a disagreeable declaration for me to mention that I myself was the means of carrying the infection to a great number of women." In another important passage he shows the analogy between puerperal fever and erysipelas, in both of which the infectious matter is readily absorbed by the lymphatics in the vicinity of the wound. Gordon not only demonstrated the infectiousness of puerperal fever, but had a definite idea of the pathology of the condition, whereas his contemporaries Hulme and Lake pronounced the omentum to be the seat of the disease. Gordon by his dissections showed that puerperal fever was a disease which principally affected the peritoneum and the ovaries. Lastly, he laid down the following rules for prophylaxis: "The patient's apparel and bedclothes ought either to be burnt or thoroughly purified, and the nurse and physicians who had attended patients affected with puerperal fever ought carefully to wash themselves and get their apparel properly fumigated before it is put on again."

BRUCELLA FEVER

THE publication in this issue of the *Journal* of a paper by Drs Scozzafave and Warner, of Welland, Ontario, on the subject of *Brucella abortus* infection in man, should serve to focus the attention of the Canadian medical profession on a new, and what promises to be a serious, public health problem.

The microorganism, known as *Brucella abortus* is the cause of contagious abortion in cattle, and is closely related to, if not identical with, *Brucella melitensis*, the specific cause of Malta fever. It is generally known that Malta fever, found originally in goats, is communicable to man, and it has been suspected for some time that *Brucella abortus* might, on occasion, be pathogenic for man also. Convincing evidence in favour of the latter possibility, however, was not obtained until 1924 when Keefer described a case, which he called Malta fever, but in which an organism conforming exactly to the type of *Brucella abortus* was isolated (*Bull Johns Hopk Hosp*, 1924, xxxv, 6).

The specific cause of Malta fever, also called Mediterranean fever and undulant fever, was discovered by Sir David Bruce in 1887. The disease is constantly to be found in countries bordering on the Mediterranean Sea and in the districts adjoining. It was apparently introduced into the United States about twenty-five years ago. The first case was recorded by Craig (*International Clinics*, Phila., 1905, xii, 576).

Evidence is accumulating to indicate that Malta fever is gradually gaining a secure foothold in the country. The extent of the menace, however, can hardly be estimated at the present time, or until medical men generally become alert to its presence.

The work of Evans (*J Infec Dis*, 1918, xii, 576) shows that *Brucella melitensis* and *Brucella abortus* cannot be distinguished culturally or morphologically. Even the most refined serological tests can hardly make a distinction. These conclusions have been confirmed by several later workers.

Infections with organisms of the genus

Brucella occur in goats, cattle, horses, pigs, and human beings. Little is yet known as to the extent of these infections and the modes of transmission.

In so far as man is concerned, the clinical features of Malta fever and infection with *Brucella abortus* are so similar as to be indistinguishable. This is to be expected in view of the close relationship and probable identity of the two micro-organisms. In view of these facts the suggestion of Drs Scozzafave and Warner that the term *Brucella abortus* infection should be applied in the future to this disease is worth considering. But why not the simpler "*Brucella fever*"?

It is a matter of prime importance that the general practitioner, especially, when he meets with an obscure case of continued fever, that is not typhoid or paratyphoid, should think of Malta fever or infection with *Brucella abortus*. At present the diagnosis must be made by laboratory methods. It is not enough that a Widal test be done in cases of this character, but further tests should be carried out with the indicted strains of *Brucella*. This procedure, carried out as a routine, would likely do much to clear up a somewhat hazy situation. Something more would be learned in regard to the relationship existing between *Brucella melitensis* and *Brucella abortus*, their relative distribution, and the extent of their invasion. Much more, too, might be learned about the clinical symptomatology and the sources of infection. Up to the present time only severe cases have been studied, probably many mild cases have gone undiagnosed.

Should it be found that Malta fever and *Brucella abortus* infection are prevalent in Canada, it should be a relatively easy matter, by a study of these diseases in goats and cattle, and possibly in other of the domestic animals, to locate the source of the trouble and the manner of its spread, and to deal with the problem intelligently and effectively.

promote progress. In any case, one of the constituents of bios is almost certainly necessary for the animal organism. According to Keil, bios can be resolved into three fractions, each necessary to the growth of yeast. One is a crystalline compound having the formula $C_5H_{11}NO_3$, the second, apparently a basic substance, is probably a derivative of indol and so related to the amino-acid tryptophane, and the third is Lash Miller's bios.

Professor Lash Miller, of the University of Toronto, and his co-workers, after prolonged study, have just made the important discovery that this fraction, which he had previously termed Bios I, is *inositol*. Inositol $C_6H_6(OH)_6$ is a derivative of benzene, in which to each of the carbon atoms of the benzene ring is joined an atom of hydrogen and a hydroxyl radical. It appears to be necessary not only to the plant, but also to animals. Its importance is only slowly becoming recognized. In plants it occurs free, and also united with phosphoric acid, calcium and magnesium, as the compound

phytin. Plants contain a special ferment phytase, which splits phytin into its components.

Inositol is present in traces in our muscles and other tissues, and in urine. While for long it was thought that this was merely accidental, due to the ingestion of plants containing it, recently Needham has shown that it is actually formed from glucose by the developing egg-embryo, from which fact there is a reasonable assumption that it has a definite function in the animal.

It is probable that the complete list of vitamins is not yet known, but we are coming to full realization of the importance of these compounds, minute amounts of which, in collaboration with similarly minute amounts of the endocrine secretions and the ferments of the body, control so delicately its vast and complex chemical mechanism. Yet we have still to learn the most important facts about them. What are the functions of these vitamins in the normal living organism? How do they act?

A. T. CANEFOX

Editorial Comments

A SECTION OF HISTORICAL MEDICINE IN THE CANADIAN MEDICAL ASSOCIATION

The arrangement of subjects in "Sections" is a convenient plan for dealing with specialized knowledge, and may sometimes even be looked upon as marking a kind of coming of age of the specialty so set apart. It is not so long ago that anæsthetics and radiology gave this evidence of their growth, and now there has been added to the list of Sections that of Historical Medicine*. This differs slightly, however, from the others in the intentions behind its formation, for where the interest in a section such as radiology, let us say, will necessarily be largely confined to those working with x-rays, that of historical medicine, it is hoped, will be a common meeting ground for all medical men. The historical aspect of medicine is one which may be more constantly in the minds of some than of others, and naturally there will be those whose knowledge of it will be wider and fuller, but there can be very few for whom it does not at some time, or in some respect, hold the fascination that lies in contemplating all that has gone and is going to the growth of our profession. There is no technical qualification

necessary for the appreciation of history or for contribution to its records.

The work which the Section will undertake, will, in general, be the presentation to the profession of matters of historical interest in medicine. There are signs of increasing efforts to gather together the records of early medical conditions in Canada, and much has been done to permanently preserve the reminiscences and experience of those whom we are fortunate in still having with us. But still more can be done in the preservation of records, and it will be not the least of the Section's work to foster all attempts to do this. There is at present no convenient place in which a central historical museum could be formed, and it is doubtful if one ever will come into being, but there is all the more need for separate collections or museums, and for the collation and record of their contents. This historical material scattered as it may be, should, however, always be available for those who wish to make use of it under the aegis of the Section. At the annual meeting in Montreal next year for example, there should be little difficulty in displaying a great many unique records and medical historical relics. In the following year fresh stores should be available in the locality chosen.

No attempt will be made to limit the interests

* Organized at a meeting held in Charlottetown, P.E.I., during the week of the Annual Convention, June, 1928.

f the Section to Canada alone. It was thought, however, that attention should be concentrated here at first, especially as there is so much in Canada that should be collected. The *Journal* has been fortunate, in recent years, in receiving many important and well written historical contributions. It is hoped that these will continue to be sent in. The *Journal* should, indeed, as with all other matters pertaining to Canadian medicine, be the natural channel through which much of the work of the Section of Historical Medicine will reach the profession at large.

THE CANADIAN MEDICAL PROTECTIVE ASSOCIATION

The Canadian Medical Protective Association held its twenty-seventh annual meeting at Charlottetown during the course of the meeting of the Canadian Medical Association. Some important business was dealt with, and it will be of interest to bring the proceedings to the attention of the profession in Canada generally.

As will be remembered by the members of the Protective Association, a questionnaire was sent out last year, asking for opinions on the advisability of increasing the annual fee to \$5 00, of which sum, \$2 00 was to be set aside as a fund to deal with certain cases that might arise, in which damages were assessed against a member whose case had been fought out and lost. There had been a feeling for some time that such a fund should be built up, but the executive did not feel that they could encroach upon the present resources of the Association for it, unless the whole membership showed themselves willing to accept possible future assessments that events might make necessary.

The replies to this questionnaire were overwhelmingly in favour of the proposed increase in the fee, and in view of this the President brought forward the by-law necessitated by the alteration. This by-law authorizes the setting aside of 40 per cent of the annual \$5 00 fee as an indemnity fund to meet the possible exigencies mentioned, and also permits of a further assessment of \$5 00 in case of the indemnity fund becoming exhausted. It is felt by the executive, however, that the fund so formed will be quite sufficient to meet any likely contingencies and that the probability of any further assessment is extremely remote.

The experience of the Association's officers enabled them to feel fairly secure in this expectation, since they had been engaged for twenty-seven years in protecting the interests of medical men in the law courts. In that time the Association had lost only one case, and the damages had not amounted to more than \$1,650 00.

It is to be remembered that many of the cases handled by the Association never go to court at all. Even if proceedings are threatened, it usually turns out, in at least three out of four cases, that acceptance of the writ by the Association's general counsel, Mr. Chrysler, K.C., is sufficient

to arrest proceedings. Still, in those cases that do go before the courts, the legal proceedings are usually expensive, whether the Association wins or not. In one case the costs amounted to \$4,000 00, by the time it was successfully fought through to the Court of Appeal.

Of course such expenditures are expected, and are quite cheerfully made, but the membership of the Association needs considerable strengthening before it can face many such calls on its treasury with complete equanimity. It is, therefore, with a feeling of satisfaction that we chronicle the acceptance of the by-law mentioned, under the operation of which the finances of the Association will be materially strengthened. It only requires ratification by the Governor-in-Council, after which it will come into force on January 1, 1929.

The following are extracts from the proposed amendments to the by-laws—

"12 The annual membership fee shall be five dollars, payable on or before the first day of January, in each and every year. Any person joining after July first shall pay half rates for the balance of that year.

"14 Each member will be required to guarantee the payment of a further five dollars if called upon, but such call will only be made in the event of the indemnity fund becoming exhausted.

"18 Delete

"19 When the Association decides to assist in the defence of an action against one of its members, it will undertake to pay the taxable party and party costs reasonably and properly incurred along with reasonable and proper witness fees and counsel fees to be settled by the General Council of the Association, and such costs shall be paid out of the funds of the Association.

"(a) If in any such case a verdict shall be obtained against such member, the Association agrees, if necessary, to pay the amount of such verdict up to an amount not exceeding five thousand dollars, and such costs as are properly taxed against him, provided that the Association will only pay, or contribute to the payment of damages, when the Council of the Association, upon consideration of all the facts of the case shall be of the opinion that the said verdict is one that should not have been given.

"(b) The Association will not pay in respect of damages assessed against any one member, any greater amount than five thousand dollars, once, in any one year."

THE MENACE OF THE MOTOR

The number of accidents, fatal or otherwise, due to motoring, is nothing short of appalling. One only has to look at the daily newspaper to realize this. There are many reasons for it. Some of them are so obvious that we need not dwell upon them. It is said that in the United States there is one motor car for every five persons, in Canada there is one for every eleven, and the number is steadily increasing. In the Province of Quebec alone, five thousand more cars have been registered this year than in 1927. This enormous increase of traffic, in streets not designed for the purpose, in itself constitutes a potential danger. Add to this, the great proportion of cars "of ancient vintage" in all stages of decrepitude, some of them indeed, all but defunct, the mechanism of which is apt to fail at the critical moment, and it can be seen that the danger is magnified. And besides this there is the personal factor.

But the hazard to the pedestrian and the motorist himself, through collision, is not the only one. The introduction of the so-called "ethyl gasoline" suggests another. This new type of fuel contains about one part in a thousand of lead tetra-ethyl. Some fatal cases of lead poisoning have occurred in the United States among men handling the lead compound, and lead has been found in the excreta of those working in garages where ethyl gasoline is sold. The special importance attending this particular lead compound lies in the fact that it is very readily absorbed and its effects are cumulative. It is soluble in oil and can penetrate an intact skin. This being so, and with the increasing popularity of the preparation as a motor fuel, health authorities have become very much alive to the new situation. The special dangers lie in the inhalation of the fumes, with the possibility of carbon monoxide poisoning superadded, and in the spraying of the streets with a compound of lead in a fine state of division. In the United States careful enquiry has failed to show that any actual harm has resulted in any case from the use of ethyl gasoline. But this conclusion is only provisional. Drivers of cars using ethyl gasoline showed no definite signs of lead absorption after exposures approximating two years. The Committee of the United States Federal Government came to the conclusion that there was no definite ground at the present for prohibiting the use of lead tetra-ethyl in motor fuel, provided its use and distribution were properly regulated.

In Great Britain this matter has elicited considerable interest also, and has led to interrogations in parliament, and the appointment of a special committee of enquiry under the Ministry of Health. This committee has come to the same conclusion as the American authorities. They advise, however, that ethyl gasoline be not used for cooking or cleaning. It seems evident that much more time must elapse before the effects of possible accumulation will become evident, and the danger be accurately appraised. In the mean time an attitude of watchful waiting is indicated.

Another menace, which is probably more serious, is poisoning with carbon monoxide, which forms about five to six per cent of the exhaust gas coming from automobiles. All are, or should be, familiar with the danger attendant on running the engine of a motor car in a closed

garage. It is stated that an average-sized engine, running under these conditions for one minute and a half will pollute the air to a dangerous degree. Occasionally, we hear of deaths from this cause. It is not generally appreciated, however, that, short of causing death, carbon monoxide is capable of producing unpleasant, not to say disastrous, results. In this issue of the *Journal* is a very carefully prepared and thorough article by Dr J. C. S. Battley, which will well repay perusal. The writer quotes W. J. McGurn, who studied carefully fourteen patients suffering from chronic carbon monoxide poisoning, in whom hereditary and otherwise acquired disease could be excluded. They exhibited various manifestations of toxic nerve irritation, such as peripheral neuritis, combined cerebrospinal and peripheral nerve lesions, multiple sclerosis, petit mal, convulsions, stupor, insanity, and, sometimes, glycosuria, permanent muscular weakness, vasomotor disturbances, and hyperpnea. It appears from this article, also, that a very small amount of the gas, when absorbed, can produce very serious symptoms. The physical characters of the gas are such that it can be inhaled in small amounts unwittingly for long periods, and its etiological relation to the nervous manifestations may therefore be quite unsuspected. While there is no need for panic at the present time in regard to chronic carbon monoxide poisoning, it is again a case for watchful waiting. We note that the Board of Health, in New York, is approaching the automobile manufacturers to see if it be feasible to have the exhaust gases discharged overhead, and not along the ground, in the hope that this will lessen the risk which undoubtedly exists in congested traffic.

THE SENIOR EDITOR

At the time of the Annual Meeting in Charlottetown the Council cabled a congratulatory and grateful message to our senior Editor, Dr Blackader, who is in England. It was the occasion of his birthday.

A reply received by letter indicates that the message was much appreciated, and that he looks forward hopefully to a continued improvement in the character and usefulness of the *Journal*, with the assistance of the augmented editorial staff.

That you may understand what it is that heals wounds, for without that knowledge you may not readily recognize the remedy, you must know that the nature of the flesh, of the body, the veins, the bones, has in it an innate force which heals wounds, thrusts and such like things.

Therefore, the surgeon should know that it is not he that heals, but the force in the body. If the physician thinks it is he that heals he deceives himself and does not understand his art. But that you

may know for what purpose you, the surgeon, exist, learn that it is to provide a shield and protection to nature in the injured part against enemies, so that these external foes may not retard, poison, nor spoil the force of nature, but that it may remain in its vital power and influence by the maintenance of such protection. Therefore, he who can protect and take good care of wounds is a good surgeon—*Paracelsus*.

Special Articles

THE BRIDGE OF LIFE

By MR C C FERGUSON,

*General Manager, The Great West Life
Assurance Company*

Winnipeg

It is a fact that there has been a noteworthy improvement in mortality, especially in the past quarter of a century, but the way this is frequently expressed is liable to occasion serious misconception. For instance, we are told that the duration of human life has been increasing as follows —

In the 17th and 18th centuries at the rate of four years per century,

In the first three-quarters of the last century by nine years per century,

In the last quarter by fourteen years per century,

And in the first quarter of this century by forty years per century

At this rate of progression we may expect that in a few more centuries people will live for at least a thousand years, thus restoring the golden prime of Methuselah—a vain hope, which I am sorry I cannot endorse!

The problem is how to express the improvement which has taken place, and this is not an easy task. It is difficult to avoid paradoxical, or seemingly contradictory, phrases, which tend to bewilderment rather than enlightenment. For instance, while the expectation of life in infancy may run from fifty-five to sixty years, the most probable year of death for human beings is the first year of life, and it is a fact that on the average a child of eight years will live for a longer time than a newly born babe. This latter seems very much like suggesting that a part of life is greater than the whole, whereas it really implies that infant mortality rates are very high. The high rates during early infancy diminish the infant's chance for longevity. We approach here the crux of the whole situation. In past generations, the wastage of infant life was appalling. It is still very great, but there has been a vast improvement during the past quarter of a century. So when people say that five, ten, or fifteen years have been added to the length of human life, they merely mean that infant mortality rates have been strikingly reduced. They do not, or at least they should not, imply that for adults there has been any similar addition to the span of life, because this is certainly not the case. There has been some improvement in the expectation of life at prac-

tically all ages, but the degree of improvement has been comparatively moderate except in early infancy.

It is not surprising that there is this improvement in mortality all through life when one remembers that certain diseases, such as small-pox, typhoid and diphtheria, once deadly, have now been practically eliminated. Tuberculosis is being successfully combatted, and, in general, great progress has been made, especially against diseases caused by parasitic microbes. Yet, there are some few people who still disbelieve in the existence of germs, and seek to remove their obvious manifestations by incantations, genuflections and contortions. On the other hand, modern civilization has invented new agencies to shorten human life. I refer to the automobile, the railway train, the aeroplane, explosives, chemicals and wood alcohol. Turning to the credit side again, we have now a much better chance of survival against violent death at the hands of outlaws and criminals. Perhaps I should except from this remark the residents of a certain city in the United States where, if King George did rule, there might be fewer murders.

As an example of improving mortality rates, I give below a Table showing the expectation of life for males, as found in England in the years 1911 and 1921 respectively.

Age	1911	1921
0	51 50 yrs	55 62 yrs
10	53 08 yrs	54 64 yrs
20	44 21 yrs	45 78 yrs
30	33 81 yrs	37 40 yrs
40	37 74 yrs	29 19 yrs
50	20 29 yrs	21 36 yrs
60	13 78 yrs	14 36 yrs
70	8 53 yrs	8 75 yrs
80	4 90 yrs	4 93 yrs
90	2 87 yrs	2 82 yrs

An inspection of this Table shows that the average infant of 1921 had a considerable advantage over the babe of 1911 in his probable length of life, but the Table further suggests that he soon loses the greater part of that advantage, so that at the age of 70 his prospects of further longevity will be very little better than those which face the septuagenarian of to-day. The statistics, therefore, do not so much emphasize for the modern babe the prospect of living to a ripe old age, but rather hold out a better promise that he will survive the dangers of weaning, they do not suggest, so much that he will survive many distant winters, but rather that he will have less immediate trouble from summer complaint. Centenarians are as rare

now as they were a century ago, so that the modernists have as yet no justification for translating "three score years and ten" into "a hundred"

It is not clear just what the Psalmist meant by quoting seventy years as the length of human life. I do not think that he was suggesting a basis on which actuaries could compute life-insurance premiums. Neither do I think that he had in mind the life-expectancy of an infant, or that he deduced his conclusions from any scientific study of the population statistics of his day. What he probably meant was that seventy years should be regarded as the average length of a well-rounded, normal life, not cut short prematurely by disease or injury. From this point of view his statement is correct. At least it is correct according to one of our modern mortality investigations, which shows that the average age at death of all persons who die after age of fifty is exactly seventy years.

Have I demonstrated my point? Is it clear that the cause of the recent improvement in mortality has been that a great many persons have been saved from premature death, especially during infancy and not that the human frame is taking on any greater inherent staying powers against the ordinary wear and tear of existence? There is absolutely no proof or indication that the period of a normal life (not cut short prematurely) is any greater now than it was a thousand years ago.

The struggle for existence goes on. Do we see in Death the stern warrior, in various panoply, bloody or anæmic, waging relentless war with life which, hoping merely to prolong the combat, now seems to be effecting its limited purpose, only to yield finally to its invincible foe? Or, do we picture the Grim Reaper, now more careful not to destroy the unripe crop, but taking as of yore and in like season his harvest of the golden grain? Or, do we think of the Wise Gardener who, relentless, in the present but beneficent in His ultimate purpose, thins out the fruit while yet green, but now leaves to mature a few more than in times past accorded with His judgment? At the same time, do not think that I am minimizing what has been accomplished. The prolongation of life, especially among the youthful, is a great achievement, a tribute to the efficiency of modern civilization.

I have compared the mortality rates based on population statistics of England, Scotland and the United States of America. Of these three countries, England appears to have the lowest mortality rates and Scotland the next lowest. It is possible that in Canada and Australia still lower rates prevail, but I have not the material at hand to state definitely.

In every population investigation, it is found that females have a greater expectation than males. On the other hand, males whose lives

are insured show lower mortality rates than females, while in connection with life annuities the reverse is the case. It almost seems to the life companies that a woman who buys an annuity straightway takes on immortality!

But the question remains how can the improvement in mortality be best expressed? Is there any appropriate index figure which will briefly tell the story? Certainly the expectation of life for the new-born babe is a misleading guide. Perhaps as good a method as any would be to use the expectation of life for age ten and in conjunction therewith note the probability of survival from birth to that age. This really involves the use of two index figures. The following table shows these index figures for the mortality of English males for the years 1911 and 1921.

	1911	1921
Probability of infant surviving 10 years	81.2 per cent	85.7 per cent
Expectation of life at age of 10	53.08 yrs	54.65 yrs

These figures, however, give no indication of the variations in the rate of mortality for particular ages. Such variations are wide, and the only strictly accurate method of comparing two mortality tables is to use about a hundred index figures, namely, the rate of mortality for each age of life.

Considering the expectation of life shown above for the age of 10, it would be possible to calculate a rate per centum for the gain in longevity, but I will not contribute to further misconception by calculating it. It would obviously be much less than the forty years referred to at the beginning of this paper, and it is very improbable that the gain recorded for the decade will be maintained in like proportion during the whole of the century.

It is an interesting speculation to estimate what is the maximum expectation of life that can be realized for the new-born infant. Using in this connection an imaginary mortality table, based on the more favourable population and insurance statistics available, and eliminating all excess mortality at infantile ages, I find that such maximum expectation would be sixty-five years. My prediction is that it will be a long time before this is generally realized.

The improvement in mortality is naturally of very great interest to life-insurance companies, but as insurances are practically never issued to infants (save in the form of savings contracts which are really not insurance), the improvement in infant mortality has had no effect on the prosperity of the business. Life insurance, has, however, benefited greatly by the improvement in adult mortality rates, but not to the extent that one might suppose who generalized from the improving life expectancies of infants.

The question is often asked why the companies do not lower the cost of insurance to the public considering the increasing profits they must be making in view of improved mortality. My answer is, first, that, as I have pointed out, these profits have not increased to the degree that the superficial observer might suppose, and, in the second place, I would reply that the cost of life insurance has been reduced considerably, so that it is now lower than it has ever been in previous history. Perhaps I may be permitted to ask the critic how many other lines of business there are which can make the same claim. It is true that there has not been much change in the average premium charged for participating insurance, but the profit refunds to the insured have been enormously increased, resulting in the noteworthy decrease in net cost of which I have been speaking. On the other hand, the rates for non-participating policies have been materially reduced, and I believe the reduction has been greater in degree than would have been justified solely by the decreasing mortality rates.

In discussing mortality statistics the term 'expectation of life' is always employed, but it may be stated, as one of the paradoxes of the subject, that actuaries do not use the expectation of life in calculating premium rates. For technical reasons, it would be incorrect to do so. They have to use a more intricate method, involving a consideration of the mortality rate for each year of life, and this tempts me to present to you a picture of human life, as the actuaries see it, and as it was described by Addison in his "Vision of Mirza":

'The bridge thou seest is human life, consider it attentively.' Upon a more leisurely survey of it, I found that it consisted of three score and ten entire arches, with several broken arches, which, added to those that were entire, made up the number about an hundred. As I was counting the arches, the Genius told me that this bridge consisted at first of a thousand arches, but a great flood swept away the rest, and left the bridge in the ruinous condition I now beheld it. 'But tell me further,' said he, 'what thou discoverest on it.' 'I see a multitude of people passing over it,' said I, 'and a black cloud hanging on each end of it.' As I looked more attentively I saw several of the passengers dropping through the bridge into the great tide that flowed underneath it, and upon further examination perceived that there were innumerable trap doors that lay concealed in the bridge, which the passengers no sooner trod upon but fell through them into the tide, and immediately disappeared. These hidden pitfalls were set very thick at the entrance of the bridge, so that throngs of people no sooner break through the cloud but many of them fell into them. They grew thinner towards the middle, but multiplied and lay closer together towards the end of the arches that were entire. There were indeed some persons, but their number was very small, that continued a kind of hobbling march of the broken arches, but fell through one after another, being quite tired and spent with so long a walk.

Observe, if you please how scientific, as well as artistic, is Addison's "Bridge of Human Life." He did not represent each individual as

walking out on the bridge until his expectancy was reached and then dropping off simultaneously with all others of his generation. On the contrary, he showed the infants perishing in large numbers, he showed a much lower mortality among those in robust youth, with increasing rates for later life. He accurately described the various diseases as "trap-doors" and "pit-falls" to prematurely catch the unwary or unfortunate. If Addison could return now, he would find that many of these trap-doors and pit-falls have been at least partially built up, and I imagine he would join with me and with you in expressing gratitude to those agencies and individuals which have been so diligent in the work of repair—to the colleges of medicine and science, to the doctors and nurses, to all the organizations that deal with public health and sanitation. The improvement has not come about fortuitously, it has been the result of study and effort of a high order. The wonder is that there are still some who will not give to science the credit she has fairly won, but who persist in their reliance on irrational remedies, which are really undermining the arches of the Bridge of Life, instead of strengthening or repairing them.

An Address

or

MATERNAL MORTALITY FROM PUERPERAL SEPSIS *†

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It is unnecessary in these days to emphasize the tragic importance to the community of the large mortality amongst young women which is incurred yearly through childbearing and childbirth. In these islands the maternal death rate is about 4,000 each year, between 1911 and 1926 inclusive there were 66,421 deaths from these causes in England and Wales. Septic infection is by far the most important single cause.

This loss by death, however, is in some ways not the gravest consequence of child-bearing, for we have come to realize that, for each mother so lost, there are many more whose health is in varying degrees chronically undermined by the damage they have sustained in childbirth. Infection and mechanical damage thus acquired are amongst the main causes of the frequent chronic ill health which dates from childbirth. We can assess within accurate limits the loss by

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† Many of the statistical quotations are omitted for lack of space (Ed.)

death, but of the incidence of persisting invalidism of child-bearing origin we have no exact knowledge. We know with certainty, however, that many of the common gynaecological disorders, the uterine hæmorrhages, the leucorrhœas, the pelvic pains, the displacements, etc., and many general disturbances, debility, indigestion, neurasthenia, rheumatism, etc., are to be traced to the lesions of childbirth. It is probably not an over-statement to say that about 60 per cent of hospital gynaecology is a legacy from vitiated childbearing, and of this a very large part falls into the category of infection. Septic inflammation of the genital canal during labour or in the puerperium may, as a useful basis for analysis, be considered as falling into one or other of three clinical types according as it is caused by (1) contagion, (2) trauma, or (3) auto-infection.

In the case of *contagion* we are dealing with an invasion of the passages by a virulent septic micro-organism, which is introduced from without. Here, as in other infective diseases—for example, scarlet fever, erysipelas, typhoid, or tetanus—our etiological quest is dominated by the consideration of the nature, virulence, and source of the infecting microbe. This type of puerperal infection is seen in its simplest form when it occurs after a normal, easy labour, with an absence of trauma of the maternal passages, and in this category are to be classed the epidemic scourges of the maternity hospitals of a former day.

Puerperal sepsis due to *trauma* is, in its essential etiological features, entirely different from that caused by contagion. Here the factor which dominates the issue is a lacerating or contusing damage of the walls of the birth passages, and the source and nature of the infective organisms become a matter of comparatively secondary importance. By this is meant that it is the trauma of the soft parts that determines the risk of sepsis. The infecting microbes which can determine the infection in such a case are notoriously widespread in nature. They may be considered as being derived exogenously or endogenously, in either case they may conceivably consist of micro-organisms which only cause disease when settling in devitalized tissue. The point of clinical importance, however, is that these somewhat theoretical matters concerning the origin of the microbe are overshadowed by the vital issue of trauma.

The third clinical type of puerperal fever is that caused by *auto-infection*. Here the micro-organisms which set up the pelvic inflammation are, in some cases, present in the genital canal before labour begins—for example, in an infected cervix. In other cases they reach the genital passages from some distant source by direct spread or by implantation—for example, from the bowel—or they may travel by the blood stream from areas of focal infection in teeth, tonsils, etc. Auto-infection, like contagion, operates in its simplest form when it supervenes in a normal spontaneous birth in which there has

been a minimum of interference and trauma. Before we can hope to grapple with the menace of puerperal fever a knowledge of the manner and degree in which these three factors operate is necessary. Until we have this knowledge much of our effort must be largely haphazard.

AUTO-INFECTION

Within recent years many observers have attempted by this means to explain infection occurring in those spontaneous cases which have not been examined at any stage of labour. It is clear that, if operating in an appreciable ratio, it would go far to explain the persisting high death rate from sepsis despite the application of the aseptic principle. Victor Bonney and others have urged its importance with considerable force and plausibility, and its possible significance is referred to in the recently published report of the Committee appointed by the British Medical Association (*Supplement to the British Medical Journal*, April 28th, 1928, Appendix iv, p. 165). Undoubted examples of autogenous infection can be cited, for instance, puerperal fever arising during scarlet fever, erysipelas, etc. A consideration of the available data, however, suggests that as a factor in the death rate autogenous invasion probably plays a minor part. Suggestive evidence may be found in an analysis of the records of many extensive maternity practices at the present day. The extern practice of the Edinburgh Maternity Hospital shows a consecutive series of about 5,000 spontaneous births with 2 deaths from sepsis, the extern department of the Birmingham General Hospital records 888 cases with an absence of sepsis mortality, whilst there is the record of 47,503 deliveries, both normal and abnormal, in the unselected practice of the East End Maternity Hospital in London with 5 deaths from sepsis, or 1 in 9,500. The practice of the Queen Victoria's Jubilee Institute midwives is likewise instructive. During 1927 there were 53,502 deliveries with 6 deaths from sepsis in normal spontaneous births, or 1 in 8,900 of the total. If we include all the deaths in this record of 53,502 cases which can directly or indirectly be attributed to sepsis, and including normal and abnormal cases, we get a maximum figure less than 0.5 per 1,000. To the production of this figure all causes have contributed. The fact which seems to emerge clearly from these data is that the very small sepsis rate in these large and unselected bodies of women is an argument against self-infection operating alone being an appreciable component of the sepsis death rate in the rest of the community. It is especially important that our ideas on this question be clarified, because much of the uncertainty and confusion in the minds of those who are anxiously seeking a remedy for the present state of affairs springs from the difficulty in assessing the true significance of this factor.

Much recent bacteriological research has been directed to the elucidation of these questions,

more especially in an attempt to relate the vaginal and cervical flora with the incidence of puerperal sepsis. As a result of this work we must now concede a comparatively frequent occurrence of streptococci in the genital passages of pregnant women, but, although it is established that puerperal infection is commonly caused by strains of streptococci, there is no evidence that the streptococci frequently present in the genital canal can play any part in initiating this infection. The fact of their frequent presence, combined with the rarity of puerperal sepsis in the absence of other factors which have a determining rôle, such as trauma, implies that this streptococcal flora possesses practically negligible primary virulent properties.

CONTAGION

Contagion is known to play a part in puerperal sepsis at the present day, as witness pelvic infection following contact with the virus of scarlet fever, or the epidemic deaths which occasionally occur in maternity homes and hospitals. To study the features of this type of infection satisfactorily, however, we have to turn to the records of the pre-Listerian lying-in hospitals. Epidemic waves of the disease were, as is well known, the scourge of these institutions. For example, in the large hospital at Vienna, out of 21,120 women delivered from 1840 to 1846, 2,260 died, or about 1 in every 10 mothers delivered perished, chiefly from puerperal fever. In 1774 at the Hôtel-Dieu, Paris, every patient attacked died—altogether about half the patients confined in the hospital.² The striking lesson for us is that, in these old hospitals, puerperal fever would seem to have been so predominantly a matter of contagion that other factors were largely negligible. I have been strongly impressed with this somewhat remarkable fact during a recent study of the records of the old Edinburgh Maternity Hospital. From 1823 to 1844, out of 3,906 women delivered in this hospital, 75 died from all causes. The records are not complete enough for an accurate differential analysis of the causes of death for this whole period, but in one of his striking papers on puerperal fever Sir James Young Simpson¹ gives accurate data for the period from 1823 to 1837, when there were 47 deaths among 2,890 women delivered, 36 out of these 47 deaths were, according to Simpson, due to puerperal fever. When we turn to the records we find that the distribution of these deaths is instructive. We discover that 30 occurred in three years, when obviously contagion was rife. On the other hand, during the four years 1826 to 1829 inclusive there were 821 successive births without a death. We may deduce from this that during this period of fifteen years, when contagion was eliminated, there was little or no mortality from puerperal fever.

The records of other hospitals exhibit the same facts.

The fact that contagion was the dominating

cause of puerperal fever in those days is brought out also by a study of the records of the outdoor practice of the hospitals. In this connection the records of the Edinburgh Maternity Hospital from 1826 onwards, which I have recently had an opportunity of studying, are instructive. Between 1826 and 1857 there were 15,144 successive deliveries with 61 deaths—that is, a rate of 4 in 1,000. The cause of death is given in 44, and in 19 it is stated as puerperal fever—that is, about 43 per cent. If we assume that this figure applies throughout the series the sepsis deaths would represent under 2 per 1,000 deliveries. I have shown that, in the outdoor department, there were considerable periods without any mortality from sepsis, clearly due to the chance absence of contagion. The same is true of the outdoor practice. Thus there is a record of 3,288 successive births during the nine years from 1839 to 1847 with no sepsis deaths. The elimination of this element brings the total death rate during this period down to 5 in 3,288, or about 1.5 per 1,000. These figures naturally challenge comparison with the practice of the art at the present time. Before any legitimate comparison is possible, however, it must be recognized that the above figures refer to deliveries and abortions, and do not include deaths from such complications of pregnancy as hyperemesis and ectopic gestation, which appear in the ordinary maternal mortality returns of the present day, and which constitute about 10 per cent of the deaths in the Registrar-General's Report for Scotland.

The limited figures just quoted support the belief that during the past hundred years there has been no depreciation in maternal mortality, and this is in accord with the national statistics. For Scotland the decennial mean figures from 1855 to 1914 are 4.9, 5.1, 5.2, 5.3, 4.6, and 5.6 per 1,000 births, and the mean for the period 1915 to 1922 is 6.2. Likewise the proportion of deaths from sepsis during this period has shown little change—namely, 1.7, 1.8, 2.0, 2.5, 1.9, 1.7, 1.7.

To realize the significance of these findings we must visualize the manner in which childbirth was managed in the pre-Listerian days and how this differed from our modern methods. The first fact of which we must remind ourselves is that our predecessors had no knowledge of aseptic or antiseptic procedure. It is abundantly clear that it is to this we must attribute in the main the ravages of puerperal contagion, for they examined freely during labour, and, in cases of retained placenta, they had no hesitation in introducing the hand into the uterus. Abdominal expression of the placenta by the Credé method did not, in point of fact, come into use till about 1867. The other important fact regarding the practice of those days is that it was based firmly upon the teaching of Harvey, Smellie, Hunter, Denman, and others, who insisted that child-bearing was a physiological process, which must be left to Nature, and which

was apt to be vitiated by interference on the part of the accoucheur. This was to be stringently withheld until Nature's effort had unmistakably failed. Instruments of any sort were the last refuge. Simpson, for example, in the Edinburgh Maternity Hospital, used the forceps in 1 in 472 labours, and other hospitals had a similar record.

These old records have a further bearing on the subject-matter of our discussion, for, as we know, there was little regard paid to the danger of repeated vaginal examination. Despite this, and the obvious and common contamination of the genital passages which must have then occurred, there was a negligible mortality from sepsis except where virulent contagion was present. This suggests that the microbes introduced by such contamination had little infectiveness in the case of labour conducted with a maximum regard to physiological needs.

The records of these pre-Listerian times would seem to suggest that, although contagion was a common cause of death, trauma was a factor which operated comparatively rarely, and this we must attribute to the principles which then underlay the practice of the art. I have shown that so strongly was this the case that at times the results obtained by our forefathers were such as compare favourably with the best practice of the present day.

It would clearly be to our advantage could we analyse the factors that stand behind the present high rate of sepsis as satisfactorily as is possible in these older records. Unfortunately in modern times the subject is hedged around with difficulties and uncertainties that make the study baffling in its complexity.

CONTAGION AS A FACTOR IN THE PRESENT SEPSIS DEATH RATE

How far contagion or trauma, or both combined, are responsible for the death rate from sepsis at the present time we have no accurate means of discovering. The massive sepsis of the pre-Listerian days, when surgical contagion repeatedly overwhelmed the surgical and maternity wards and often spread into extra-hospital practice, is no longer with us, and it would seem certain that the elimination of this virulent and spreading contagion must necessarily have led to a lessening of this contact factor in modern practice. Despite this, however, we know that contagion does still operate—as, for example, where the scarlatinal virus is transmitted to a parturient woman, or where two or more women are clearly infected from one common source. The exact extent to which infection so conveyed is responsible for modern sepsis is, however, more difficult to define than in the case of the older records. Whilst this is so, we are not altogether without evidence. The figures I have already quoted in connection with auto-infection are again of service here. In the outdoor practice of the Edinburgh Maternity Hospital, for example, during four years there have been about 5,000 normal deliveries with 2 deaths. During the

year 1927 there were 53,502 deliveries in the practice of the midwives of the Queen Victoria's Jubilee Institute in England and Wales with 6 deaths from sepsis in normal births—that is, 1 in 8,900 total deliveries, or about 0.1 in 1,000. This total figure refers, of course, to all cases, normal and abnormal. If we exclude the forceps cases we get a figure approximately equal to 1 in 8,000 or 0.12 in 1,000. This indicates the rarity of contagion in the practice of midwives, and when we remember that in England and Wales over 50 per cent and in Scotland over 30 per cent of the maternity service of the community is in their hands, we have ample reason for the belief that, in this proportion of the country's service at least, contagion is of comparatively minor importance. Then we have a record of 47,503 successive cases in the outdoor and indoor practice of the East End Maternity Hospital, with a total of 5 deaths from sepsis, or 1 in 9,500 cases. It is, of course, not necessary to conclude that all the sepsis deaths in these records are due to contagion. The figures are quoted with the object of indicating the maximum possible mortality from this cause when this is operating alone. It is not easy to conceive any reason why this small ratio of contagion should be appreciably different in the rest of the community not covered by these precise records. In other words, the above analysis leaves in one's mind the impression that contact infection, while it does admittedly still occasionally operate to maintain the incidence of fatal puerperal sepsis, is probably a factor of comparatively minor value, and that to explain the persistently high rate in modern practice we have to direct our attention to other factors.

CONTAGION IN PRESENT-DAY HOSPITALS

At the same time the magnificence of the era inaugurated by Lister is apt to blind us to the fact that even in the hospital system of our own times there are still perpetuated in some degree the risks with which our forefathers battled in vain. There is still intrinsic in it the danger incidental to the assembling of numbers of parturient women within four walls. The reality of this risk is at once apparent when we recall that, whilst the main practice of such hospitals is concerned with normal childbirth, it is also largely engaged in serving, and in attracting to itself, often from a wide district, the abnormal, which is often synonymous with the frankly or potentially infected case. This is especially true of the large central hospitals, where the fact of numbers naturally multiplies the risks. A study of this problem has long convinced me that these risks are by no means negligible. Even when the technique of the hospital is good, the risk of the leakage from infected to clean case can never be completely blocked, more especially at times when the hospital practice is working at high pressure.

In support of these contentions I may quote the figures of one well-known hospital, for which I am indebted to the registrar. During four

years, in 4,278 normal spontaneous deliveries there were 72 cases of puerperal fever with 5 deaths. In yet another well-known hospital during one year there were reported 11 instances of puerperal infection in spontaneous births with 3 cases in which the birth is described as quite normal. The report of another large hospital shows that, out of 27 deaths from puerperal infection in one year, there were 4 deaths in women in whom the birth was spontaneous and uncomplicated. These hospitals are all actively engaged in abnormal midwifery in addition to catering predominantly for the normal birth. The problem is thus seen to be a complicated one.

The admission, the examining, the labour rooms, and the wards of the two sets of cases must be rigidly isolated from one another, and the same rigid separation must apply to the nursing. The risk of patient-to-patient transmission is further lessened by the adoption of the small ward principle, especially for the abnormal delivery. In many instances we know that maternity hospital buildings are inadequate, and, in their present state, are unable to meet the demands which a rigid application of the modern ritual of prevention implies. I feel that, although the consideration of such questions introduces matters of some delicacy, it is urgent that they be reviewed in the frankest possible manner at this time, because as we all know, there is a strong advocacy in some quarters of an increase in maternity hospital accommodation as one means towards remedying puerperal mortality and morbidity. Whilst finding myself in sympathy with this attitude, I must admit that I consider any such widespread experiment as having elements of danger, except it be carried out with the most stringent regard to the safeguards I have mentioned. The exact proportion of the total sepsis death rate which this hospital contagion implies we have no means of determining. That, however, we may safely consider it as comparatively small is indicated by the meagre share of the total births which occur in hospital. The maternity hospital beds officially known by the Ministry of Health to exist in England and Wales number only 2,290 in 149 institutions (Janet Campbell, *Protection of Motherhood*, 1927, p. 64).

TRAUMA

I have already stated that the factors behind the persisting sepsis rate are complete. One example of this suggests itself to the mind. It is often urged that we have lost to parturient women the advantages of a century's progress because we have vitiated child-bearing by a too great recourse to instrumental delivery. It is true that interference with the natural process, by instrumental or other means, was in the old days employed at the most in only one out of several hundred cases, and that, even under the best conditions nowadays, such physiological child-bearing is only rarely found. Even in the case of the practice of the Queen Victoria's Jubilee midwives, who, it may be argued, deal with

the most normal class of case, the forceps deliveries number about 6 per cent of the total, and in the East End Maternity Hospital, where physiological childbirth is rigidly aimed at, the instrumental rate is over 2 per cent. Over the rest of the community we may safely conclude this rate is still higher. Faced by this indisputable evidence it is not surprising that many have urged that trauma is at the back of modern sepsis. It cannot be denied that there are cases—and every member of the staff of a maternity hospital can quote instances—in which unjustified interference has led to disaster. On the other hand, to argue on the basis of such individual cases—which usually spring from lack of experience and well-intentioned though over-anxious zeal—that trauma inflicted by malpraxis is the essential cause of the persisting death rate is to lose sight of other factors which have a wide-reaching significance.

One of these factors concerns the possible change in the fitness of women for child-bearing and childbirth as compared with their sisters a century ago. During this period there have been gross changes in the mode of life and feeding of the community. Moreover, we have to consider the possible and special bearing of rickets. It is not improbable that the increased protection of child life, which constitutes one of the most remarkable features of modern social hygiene, may have increased the proportion of those with skeletal defect who survive into adult life. As an obstetrician practising amongst the same class of women as those with whom Sir James Young Simpson had to deal nearly a century ago, I am convinced that the need for intervention on mechanical grounds is now greater than it was then, when forceps were employed only in 1 in every 472 cases.

Whilst it is thus probable that traumatization has played in recent times an increasingly important part in puerperal sepsis—and the data analysed earlier in this paper would seem by a process of exclusion to lead the evidence incriminatingly in this direction—it is at the same time not improbable that at the back of it there are some structural factors not wholly within our control, and therefore not wholly preventable by us as obstetricians. There are, however, many indications pointing towards a better and possible provision for the parturient woman if we are prepared to take advantage of them. The practical conclusion to which my studies have led me is that, whilst auto-infection can be largely displaced from the platform to which it has been raised by some, and whilst contagion likewise probably plays only a secondary part, to trauma from interference it would seem we have to ascribe the chief agency in the maintenance of sepsis, although we are not warranted in assuming that the main burden of responsibility is to be placed on the medical attendant.

The fact that, with a well-organized maternity service, a greatly diminished mortality rate is obtainable points clearly the way to progress,

and suggests that the immediate problem for the community is the provision of better machinery for bringing to the help of labouring women the knowledge we possess, rather than the pursuit of a mark-time policy which awaits the outcome of further research.

In support of this contention I would instance the experience of the Queen Victoria's Jubilee Institute, which last year had the splendid record of 53,000 deliveries with a mortality of 72, or 1.3 per 1,000. It is to be noted that these figures refer to the combined practice of midwife and doctor, for medical practitioners were called in to the aid of the midwife in 25 per cent of the cases. It is a very successful and encouraging example of team work. The midwife's task is only made possible when it is united to the knowledge that she has the doctor behind her in case of need, whilst, on the other hand, the fact that the routine management of the practice is in the hands of the midwife makes for the possibility of a more physiological attendance of the normal case than is to be expected from the practitioner, with whom midwifery is often a disturbing item in the course of a busy day interspersed with urgent calls, and from whom, moreover, regardless of every other consideration, there is too often demanded a speedy termination of labour. It may be argued that the small death rate in this large practice is dependent upon the fact that the midwives' cases are to some extent selected. This is not denied, and that this selection is not inconsiderable is suggested by the very low death rate in the series from puerperal convulsions and albuminuria—from 0.1 to 0.2 per 1,000, as contrasted with a death rate over the rest of the community of from 0.6 to 0.8 per 1,000. Making every allowance, however, for these facts the record is full of encouragement, and points to the advantages to be obtained from a wider extension of the midwife-doctor system.

The signal advantages of such combination are even more convincingly demonstrated by such an institution as the East End Maternity Hospital in London, where the bulk of the cases are conducted by midwives, and abnormal cases are treated by medical practitioners on the honorary staff. This institution conducts over 2,000 cases yearly, about half being in the hospital. There is a well-organized ante-natal system, and the forceps rate is under 3 per cent. Despite the fact that the practice is amongst the very poor, and that it is practically unselected, it has a mortality rate standing at a little over 1 per 1,000 cases. For four years, in a total of about 9,000 cases, it sank to the extremely low level of 0.67 per 1,000. Sepsis is practically eliminated from this practice, and there can be little doubt that this is due mainly to the excellent administration, the careful supervision, and the low instrumental rate.

It is to be specially observed that the admirable results obtained in the case of these extensive practices flow entirely from the method and

machinery employed. There is installed by comparatively simple means a system by which—and this is especially noteworthy in such an institution as the East End Maternity Hospital—the physiological management of labour is encouraged, the abnormal case is seen betimes, and difficulty and danger are thereby anticipated and prevented. The record of this institution and its almost complete freedom from sepsis is one of the most cogent arguments in support of the contention that the dominating factor behind sepsis in ordinary midwifery is trauma. So remarkably successful has this hospital been in its effort to expel from its doors not only sepsis, but also the other complications of labour and the puerperium—for example, eclampsia—that we might at first sight feel ourselves compelled to attribute the result to some unduly favourable circumstance in the material of their practice. Against this, however, it may be urged that the official records show that the death rates of the communities in which this hospital carries on its work are several times greater than that exhibited by the indoor and outdoor practice of this institution.

It cannot, I believe, be denied that the evidence furnished by an enlightened and critical analysis of all the various forms of maternity effort we have reviewed goes to support the contention of Fairbairn and others that "a country's maternity service is best built on the foundation of a service of midwives with medical help in difficult cases." Before this ideal can be universally realized much must be done in the way of education of the public and in the reorganization of the present machinery of practice. Doctors can do a great deal in both directions, and there is ample evidence to hand that in these objects they can count on the help of the central and local authorities. The problem in any area can only be satisfactorily dealt with by strenuous local effort.

The high death rate in some areas invites the suggestion that on occasion the subject may become eminently a matter for the active interest and participation of the local body.

CONCLUSIONS

- 1 Autogenous infection is a minor primary cause of fatal puerperal sepsis.

- 2 Contagion is probably of comparatively secondary importance. The well-established risks of contact infection in hospitals call for care in the extension of the hospital system of maternity service.

- 3 There is evidence that trauma is the most important cause of the death rate from sepsis. This is not entirely a problem involving the medical attendant, it has implications of a wider nature.

- 4 The immediate need is an improved machinery for maternity practice based on a midwife-doctor combination. From the standpoint of immediate policy the importance of this

overshadows all other considerations—for example, "research"—and there is reason for the hope that by this means alone a lessening of the death rate is possible

5 Improved education of the public, the midwife, and the student, and the assistance of the central and local authority, are all necessary for the creation and working of a satisfactory machine

REFERENCES

- 1 SIMPSON, SIR J Y, *Obstetrical Works*, edited by Priestly and Storer, 1856, ii, p 18
- 2 SPENCER, H R, *The History of British Midwifery from 1650 to 1800*, London, 1927, p 156
- 3 FAIRBAIRN, *Brit M J*, 1927, i, 47

DR FORDYCE, in the discussion following this paper, regarded the question of segregation of confinement cases in hospitals as an important one, and doubted whether it was advisable for normal cases to be confined in hospitals where there was only a limited amount of space. He thought that forceps delivery in selected cases prevented the trauma which might otherwise be caused by a very delayed labour.

PROFESSOR HENDRY referred to three cases of pyrexia due to extraneous origins—namely, infective rhinitis, commencing whitlow, and a septic wound on the skin of the patient's husband, these showed the importance of contagion. He supported very strongly Dr Young's principle of separate accommodation in maternity hospitals for cases sent in after intervention outside.

DR MILLER showed by statistics of the Royal Maternity Hospital that the incidence of pyrexia in patients delivered instrumentally was much larger than in those whose delivery had been spontaneous. He had found a marked variation in the bactericidal power of the blood in pregnant women, which might explain the variation in individual susceptibility to infection.

DR J M BOWIE regarded trauma as of great importance in puerperal sepsis. He thought that the whole machinery of maternity service in this country needed overhauling. Reorganization might be effected in two ways (1) by the present system of trained midwives working alone in normal cases and assisted by doctors in difficult cases, or (2) since midwifery work appealed to many doctors a new race of specialists might rise, who would confine themselves to it.

THE PRESIDENT thought that hæmolytic streptococci might be rendered temporarily inert by the normal vaginal secretion, but in certain circumstances they might regain their hæmolytic action. He urged the segregation of complicated cases, but to do this a large hospital was required. He did not think that trauma was only due to instrumental intervention, since normal labours were often associated with very severe trauma. He considered the co-operation of midwives and medical practitioners an excellent practice.

THE FOUNDER OF THE RED CROSS

In connection with the centenary of the birth of Henri Dunant, the founder of the Red Cross, which occurred on May 8th of this year, the Canadian Red Cross proposed a competition in editorials on his life and work and his influence in promoting humanitarian standards and service first in war and now in peace. His idea, from which the Red Cross sprang, not only produced a very great improvement in the care provided for sick and wounded soldiers, but has also resulted in a world-wide peace-time organization for the improvement of health and the mitigation of suffering.

A committee of well known writers made the awards. The following editorial by Mr H B Christie in *The Expositor* of Brantford, Ontario, won one of the prizes among the dailies. The celebration of Henri Dunant's birth and work took place in one form or another in fifty-four countries. [Ed.]

"The vision of the young Swiss philanthropist, Henri Dunant, gave to mankind one of the most chivalrous and beneficent organizations in the history of civilization, the Red Cross. In the ultimate working out of his ideal, he made an extraordinary contribution to the advancement of the social welfare of the world. Hence the Red Cross Societies throughout fifty-nine nations are celebrating to-day the centenary of his birth which took place on May 8, 1828. It is probable that Dunant derived the inspiration for his work from the heroic mission of Florence Nightingale, who, impelled by the revelation of the terrible conditions prevailing on the battlefields and in the hospitals of the Crimea, organized a band of devoted nurses to care for the wounded and dying soldiers, to supply their necessities, relieve their sufferings, and comfort them by a ministry of love and kindness.

The event which stirred the sympathies of Dunant, and aroused him to action, was the agony and suffering which he witnessed as a youth, thirty-one years of age, at the bloody battlefield of Solferino, on the plains of Lombardy in 1859, one of the most sanguinary conflicts of history. In this battle the allied armies of France and Sardinia, to the number of 150,000, superbly led by Napoleon III, Victor Emmanuel and Marshall MacMahon, utterly routed the Austrian army, which numbered upwards of 175,000, under the personal command of the Emperor Francis Joseph. The slaughter was appalling. The battlefield was strewn with 40,000 killed and wounded soldiers, and the ghastly scenes of suffering and death witnessed by Dunant, as the terrible conflict ebbed and surged through sixteen long hours, as the dead and dying were trampled by the advancing armies, crushed by galloping artillery, ruthlessly trodden down by the iron hoofs in fierce cavalry charges, made an unforgettable impression on his mind, and he wrote the book, 'A Souvenir of Solferino.'

in which he vividly portrayed the gruesome horrors of the battlefield

His purpose in portraying these scenes of horror and suffering, in which the wounded and dying were left without adequate medical attention and nursing, was to call the attention of the civilized world to the cruel inhumanities of war, and to cause something to be done for the relief of the wounded and suffering soldiers. "Would it not be possible," asked, "to found and organize in all civilized countries permanent societies of volunteers which, in time of war, would render succor to the wounded without distinction of nationality?" Out of this suggestion came the noble and chivalrous philanthropic organization known as the Red Cross.

The idea was developed by Monsieur Gustave Moynier, president of the Society of Public Utility in Geneva and a jurist of international repute. Monsieur Moynier organized a committee of five to carry out Dunant's suggestion. This committee invited the governments of Europe, together with noted military, medical and philanthropic personages, to attend an international convention in Geneva on October 26, 1863. The convention was attended by thirty-six delegates, representing fourteen nations, and six charitable and benevolent associations. As a result the Swiss government called an official convention, which assembled in Geneva the following year. On August 22, 1864, what is known as the Geneva Convention, was signed by the delegates of twelve European nations, whereby, under the terms of the agreement, hospitals, officials of the sanitary service, volunteer nurses, inhabitants of the country aiding the wounded soldiers, and even the wounded soldiers themselves, were declared to be neutral. The terms of this convention were extended to naval warfare by The Hague convention of 1899. The Geneva convention was revised and replaced by the Washington convention of 1906.

Thus was brought into existence this great philanthropic organization, which was designed to supplement the medical and sanitary services of the armies by trained volunteer societies, and to minister relief in war, epidemics, famines, floods and disasters of every kind. It has been an incalculable blessing to humanity, and on the occasion of many conspicuous catastrophes afforded relief to stricken and suffering humanity. During the Michigan fires, in 1881, in the yellow fever epidemic in Florida, in 1888, in the Johnstown flood, in 1889, in the terrible Russian famine, in 1891, in the Armenian massacre, in 1896, in the Galveston disaster, in 1900, in the Mont Pelee eruption, in 1902, in the San Francisco earthquake, in 1906, during the terrible

earthquake in Japan, in 1925, in which 99,331 were killed, 103,733 injured, and 43,746 were missing, and on many similar occurrences, the Red Cross rendered heroic and faithful service, thereby vindicating its claim to be one of the greatest humanitarian agencies in the world. It reached its climax in the services rendered to the various nations in the Great War, and in numerous calamities of plague, famine and pestilence which occurred in Europe after its termination. It performed invaluable services in regard to prisoners of war, in the identification of missing men, in furnishing information of every possible kind, in the distressing problems of internment and deportation of civilians, hospital staffs, hostages, and refugees, in the repatriation of families in the invaded and devastated areas, and in ministering to the necessities of the homeless, sick and suffering in the plague stricken districts of Europe.

Perhaps the chief glory of the Red Cross has been the extension and adaptation of its work, under the Covenant of the League of Nations, to the needs of the world in times of peace, such as the improvement of health, the prevention and eradication of disease, and the amelioration of suffering wherever it is found. In pursuance of this policy the Canadian Red Cross has cared for the needs of ex-service men, and has established nurseries at the seaports where, during 1927, help and comforts were provided for 30,000 new Canadians. Classes were conducted in home nursing for 12,000 women and girls, and hospitals and nursing stations were maintained in pioneer settlements, ministering to the needs of an extensive population. It has provided relief in disasters such as the Northern Ontario conflagration and the Cochrane epidemic, promoted measures for the public health and distributed large quantities of instructive literature. Moreover, it has introduced the Junior Red Cross into the schools of Canada, whereby, in five thousand classrooms, 140,000 young Canadians are given instruction in healthful living. It has provided treatment for 5,000 crippled children, and befriended the unfortunate in innumerable ways. In carrying on this beneficent work the Canadian Red Cross has expended \$7,000,000 and exhausted its treasury, but it has established its claim to the generous support of the people of Canada as a national institution of a philanthropic character, that knows no distinctions in its sympathetic and helpful service. The Red Cross, in carrying on its ministry to suffering humanity, is an exemplification of Him who went about doing good, and who said "It is more blessed to give than to receive."

The name "antimony", dating from the 13th century, has an interest all its own. One Basil Valentine was called on to treat a community of monks, and used a drug, then known as stibium, for

the purpose. The monks died, and the name antimony was born. The French original and present day word being "antimoine" from "anti moine" which in English is "anti monk."

Men and Books

THEORIES ABOUT THE MOVEMENT
OF THE BLOOD WHICH WERE HELD
BEFORE HARVEY

BY THE ASSOCIATE EDITOR

Montreal

The year 1628 marks the beginning of a new epoch in the history of medicine, for it was in that year that William Harvey, a London physician, published a book, small in size and humble in appearance, but great in matter—*Exercitatio Anatomica de Motu Cordis et San- guinis in Animalibus*. Here, for the first time in recorded history, a definite problem, dealing with an all-important function of the animal body, was attacked on the experimental side, under a definite and logical plan. The work is entirely modern in spirit, and is carried to an almost flawless conclusion.

It should be pointed out at the outset, to prevent misunderstanding, that Harvey did not discover that the blood *moved*—this was known to Aristotle and Galen—but he did discover why it moved and how it moved, and this at a time when the anatomists had not freed themselves from the domination of Galen. To appreciate fully Harvey's great contribution to physiology, and, indeed, to science generally, something should be known about the development of the notions current in regard to the movement of the blood and its function.

Aristotle considered the heart to be the central organ controlling the blood flow. It is the seat of vitality, the fount of the blood, the place where the blood is finally elaborated and imbued with animal heat. The blood is contained in the heart and vessels as in a vase, hence the term "vessel." He taught, farther, that the nutriment oozes through the walls of the bloodvessels and the various passages "like water in unbaked pottery," to use his apt comparison. Aristotle did not distinguish between arteries and veins. He calls them both "phlebes" ($\phi\upsilon\lambda\epsilon\beta\epsilon\varsigma$). The vena cava is the great vessel, the aorta, the smaller, and both contain blood. He did not use the term "arteria" for either of them. There is no movement of the blood from the heart to the vessels, in the sense of an obvious current, but the blood is continually being absorbed by the substance of the body, and as continually being renewed by absorption of the products of digestion, the mesenteric vessels taking up food much as plants take it up through their roots. The "pneuma" or "spiritus" is obtained from the lungs and is distributed to the heart by the pulmonary vessels, one to the right, and one to the left. The vessels in the lungs absorb the "pneuma" by mutual contact with the branches of the trachea. In Aristotle's view,

the pulsation of the heart and vessels is a sort of ebullition by which the liquids are inflated by the vital heat. Cooling is brought about by the "pneuma," which is taken in by the lungs and brought to the heart. It is worth noting that the trachea is called $\alpha\rho\text{-}\eta\rho\iota\alpha$ (arteria) both by Aristotle and Hippocrates. It is the *air-tube* carrying the breath through the lungs.

Coming now to the Alexandrines, one of the leading representatives of their school, Praxagoras, discovered that it is the arteries that pulsate, but he was responsible for the great error that the veins only contain blood, the arteries, air. Observing that the arteries after death are usually empty, Praxagoras concluded that during life they are filled with an aeriform fluid, a kind of pneuma, to which the pulsation is due. Consequently, the word "arteria," already applied to the trachea as an air-containing tube, became attached to the arteries. The trachea, on account of its rough and uneven surface, was called $\alpha\rho\text{-}\eta\rho\iota\alpha\text{-}\rho\alpha\epsilon\iota\alpha$ (arteria trachea), that is the "rough air-tube." The French still call it "trachée-artère." Another great Alexandrine, Erasistratus, still farther elaborated the doctrine of the "pneuma," one form of which, he thought, comes from the inspired air, passes to the left side of the heart, and is distributed to the arteries. This is the cause of the heart-beat and the source of the innate heat of the body. It maintains the processes of digestion and nutrition. Erasistratus called it the "vital spirit." The other, the "animal spirit," is manufactured in the brain, chiefly in the ventricles, and is carried by the nerves to all parts of the body, thus endowing the animal with life and motion and perception. Thus, a fundamental distinction was made early between two sets of organs and two corresponding sets of functions. The vascular system, comprising the heart, vessels, and abdominal organs, is governed by the vital spirit, in the nervous system is elaborated the animal spirit, which controls motion and the general and special senses.

These teachings went almost unquestioned until well into the eighteenth century. Even now, we sometimes speak of "high" and "low" spirits, when we do we unconsciously reflect the views of the great Alexandrine.

Galen, four or five hundred years later, knew much about the movement of the heart, the pulsation of the arteries, and the action of the valves. He refuted by experiment the error that the arteries contain air and not blood. He tied a cord above and below a length of artery in the living animal and, cutting out the section, found, of course, that blood and not air was present inside.

Galen's conception ran something like this. There are two kinds of blood. One of these,

contained in the venous system, is dark and thick, and serves for the general nutrition of the body. This system starts from the liver, the central organ of nutrition and sanguification. From the portal system the products of digestion are absorbed from the stomach and bowels. From the liver come the *venæ cavæ*, one supplying the head and arms, the other the lower extremities. Springing from the right side of the heart is a branch corresponding to the pulmonary artery, which carries the blood to the lungs. This is the closed venous system. There is another, the arterial system, containing a thinner, brighter, and warmer blood, characterized by an abundance of vital spirits. Warmed in the ventricles it distributes the vital heat to all parts of the body. Both systems are closed, and communicate with each other *only through pores or perforations in the septum of the heart*.

One can hardly understand how Galen failed to discover the *circulation* of the blood. He knew that the pulsatile force is inherent in the walls of the heart, he knew that the systole drives blood out from, and that the diastole sucks blood into, the cavities of the heart, he knew that the valves of the heart determine the direction by which the blood enters and leaves the organ. But he seems to have been obsessed with the idea that the heart is a "fireplace," from which is derived the innate heat of the body. He did not grasp, evidently, that, instead, it is a "pump" for driving and distributing the blood. "How the body became such a 'fiery dragon,'" as Sir Clifford Allbutt phrased it, is sufficiently remarkable, and was never explained. His notion seems to have been that there is a sort of tidal movement in both systems, and yet, curiously enough, he sometimes makes use of expressions, in speaking of the venous system, singularly like ours. He calls it "a conduit full of blood, with a multitude of canals large and small running out from it and distributing blood to all parts of the body." The method of nutrition he compares to irrigating canals and gardens, with a wonderful dispensation of nature that they should lack "neither a sufficient quantity of blood for absorption, nor be overloaded at any time with an excessive supply."

Galen's views held sway, with all the weight of authority, until the time of Harvey. One step was made in advance, however, by Michael Servetus in 1553, when he described very accurately the lesser circulation in the lungs, in his *Christianismi Restitutio*. His immortal fellow-student Vesalius apparently was unaware of his work, for he accepted, at least at first (1543), Galen's dictum as to the porosity of the cardiac septum. That Vesalius had his doubts, however, is indicated in the second edition of his *De Fabrica* (1555), where he states that, in spite of the authority of the Prince of Physicians, he cannot see how the smallest quantity of blood can pass through so dense a muscular partition. It is singular how tenacious of life this doctrine of the porosity of the septum was, for many

years after, we find Harvey assuring Professor Riolanus, of Paris, who had his scruples, that "if only you will pour water into the right heart, and tie all vessels going to and from the lungs, not one drop will get into the left ventricle."

Lake Servetus, Colombo, also, believed in a lesser pulmonary circulation, but was so far astray as to deny that the heart is a muscular organ.

Finally, Cesalpinus, for whom has been claimed by his countrymen the honour of the discovery of the circulation of the blood before Harvey, is considered by Osler to be a simple Galenist. Cesalpinus believed, like all his contemporaries, that the blood was distributed through the body, for its nourishment, by the *vena cava* and its branches. But, to discuss the merits of the controversy would lead us too far afield.

And now William Harvey comes upon the stage.

WILLIAM HARVEY*

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William Harvey the discoverer of the circulation of the blood, was born on April 1, 1578, at Folkestone, and died at Roehampton June 3, 1657. His preliminary education was probably carried on in Folkestone, where he learned the rudiments of knowledge and gained his first acquaintance with Latin. He went to the King's School, Canterbury, for five years, no doubt going home for the holidays, some of which must have been spent in watching the constant transport of troops to Spain and Portugal, which was so noticeable a feature of the Cinque Ports during the latter years of the life of Queen Elizabeth. His schooling ended, Harvey entered at once, as an ordinary student, at Caius College, Cambridge.

The choice of this College seems to show that he was already destined by his father to follow the medical profession. His habits of minute observation, his fondness for dissection, and his love of comparative anatomy, had probably shown the bias of his mind from his earliest years.

Dr. Caius, in addition to his knowledge of Greek, may have been said to have introduced the study of practical anatomy into England. His influence obtained for the College the grant of a charter in the sixth year of the reign of Queen Elizabeth, by which the Master and Fellows were allowed to take annually the bodies of two criminals condemned to death and executed in Cambridge or its castle, free of all charges, to be used for the purposes of dissection. Unfortunately, no record has been kept as to the

*An address delivered before the Victoria Medical Society on May 18th, 1928, on the occasion of the Harvey Tercentenary Celebration.

use which the College made of this privilege, nor is there any means of ascertaining whether Harvey did more than follow the ordinary course pursued by students until he graduated as a Bachelor of Arts in 1597. His education, in all probability, had been wholly general thus far, consisting of a sound knowledge of Greek, a very thorough acquaintance with Latin, and some learning in dialectics and physics.

He now began his more strictly professional studies, and the year after he had taken his Arts degree at Cambridge found him travelling from France and Germany towards Italy, where he was to study the sciences more nearly akin to medicine, as well as medicine itself.

Harvey was attracted to Padua, and many reasons probably influenced him in his choice. The university was specially renowned for its anatomical school, rendered famous by the labours of Vesalius, the first and greatest of modern anatomists, and the work of his successor, Fabricius, one of the most honoured and learned teachers of his day. Caius had lectured on Greek in Padua, and some connection between his college at Cambridge and his old University may still have been maintained. The fame of Fabricius and his school was no doubt the chief reason which led Harvey to Padua, but there was an additional reason which caused his friends cheerfully to concur in his resolve. Padua was the university town of Venice, and the tolerance which it enjoyed under the protection of the great commercial republic rendered it a much safer place of residence for a Protestant than any of the German universities or any of its fellows in Italy.

Fabricius was more than a teacher to Harvey, for a fast friendship seems to have sprung up between master and pupil. At this time a man of sixty-one years (he died at the age of eighty-two), he was engaged during Harvey's residence in Padua in perfecting his knowledge of the valves of the veins. The valves had been known and described by Sylvius (1478-1555), that old miser who warmed himself in the depth of a Parisian winter by playing ball against the wall of his room rather than be at the expense of a fire. The work of Sylvius had fallen into oblivion, but Fabricius rediscovered the valves in 1574. His observations were not published until 1603, when they appeared in a small treatise—*De venarum ostiis*. There is no doubt that he demonstrated their existence to his class, and Harvey knew of the treatise, though it was published a year after his return to England.

Now, when we consider Harvey's work, it all appears to be a continuation and an amplification of that done by Fabricius. Both were intensely interested in the phenomena of development, both wrote upon the structure and function of the skin, both studied the anatomy of heart, lungs and blood vessels, and both wrote a treatise *de motu locali*. Harvey's youth, his comparative freedom from the trammels of authority, and his more logical mind, enabled him to outstrip

his master and to avoid the errors into which he had fallen. This advance is particularly well seen in connection with the valves of the veins. Fabricius taught that their purpose was to prevent over-distension of the vessels when the blood passed from the larger into the smaller veins (a double error), whilst they were not needed in the arteries because the blood was always in a state of ebb and flow. It was left to Harvey to point out their true use, and to indicate their importance as an anatomical proof of the circulation of the blood.

Harvey graduated as Doctor of Medicine at Padua in 1602, and the eulogistic terms in which his diploma is couched leave no doubt that his abilities had made a deep impression upon the minds of his teachers. The diploma was presented to the College of Physicians of London on Sept. 30th, 1766, and is dated April 25th, 1602. It further states that he conducted himself so wonderfully in the examination, and had shown such skill, memory and learning, that he had far surpassed even the great hopes which his examiners had formed of him.

Armed with so splendid a testimonial, Harvey must have returned at once to England, for he obtained the degree of Doctor of Medicine from the University of Cambridge in the same year, when it appears also, that he took a house in London, in the parish of St Martin's, and lost no time in attaching himself to the College of Physicians. This body had the sole right of licensing physicians to practice in London and within seven miles of the city, and he was admitted a licentiate of the College on October 5, 1604. A few weeks after this he married Elizabeth Browne, daughter of Dr Lancelot Browne, physician to Queen Elizabeth and to James I. Dr Browne died the year following his daughter's marriage. Harvey's union was childless, and we know nothing of Mrs Harvey, except that she died before her husband.

On June 5, 1607, Harvey was elected a Fellow of the College of Physicians, and immediately attached himself to St Bartholomew's Hospital.

Until the year 1745 the teaching of anatomy in England was vested in a few corporate bodies, and private teaching was discouraged in every possible way, even by fine and imprisonment. The College of Physicians and the Barber-Surgeons' Company had a monopoly of the anatomical teaching in London. Subjects were difficult to procure, and dissecting came to be looked upon as part of the legal process so inseparably connected with the death penalty for crime that it was almost impossible to obtain even a body of a "stranger" for anatomical purposes. The executions in London were witnessed by great crowds, who often sided with the friends of the felons and rendered it impossible for the body to be taken away for dissection. A Charter of James I enlarged their powers by allowing the College of Physicians to take annually the bodies of six felons executed in London, Middlesex or Surrey.

Little is known in detail of the manner in which Anatomy was taught by the College of Physicians, but it appears to have been carried out practically in a series of demonstrations upon a body. As there was no means of preserving a subject it had to be by a general survey, rather than in detail. A single body was dissected to show the muscles (this was the muscular lecture), another to show the bones (the osteological lecture), another to show the parts within the head, chest and abdomen (the visceral lecture). The lecturer for the various parts was not always the same, though great teachers, like Reid and Harvey, gave a course upon each subject.

The Lumleian Lecture was on Surgery, established at a cost of forty pounds by two notable men, Lord Lumley in Essex, and Dr Caldwell in Derbyshire. The lecturer was appointed for life, and its subjects were so arranged that they recurred in cycles.

Harvey, in all probability, began to lecture at once upon surgery as the more theoretical portion of his subject, but it was not until April, 1616, that he gave his first anatomical lecture. It was a visceral lecture for the terms of the bequest required that it should be upon the inward parts. He was only thirty-seven years of age at this time, a man of the lowest stature, round-faced. His eyes were small, round, and very black, his hair as black as a raven and curling, his utterance was rapid and he was given to gesture. When discoursing with anyone he unconsciously played with the handle of a small dagger he wore by his side.

The manuscript of Harvey's first course of lectures is now in the British Museum. The notes of his visceral lecture are of especial value to us, though they are a mere skeleton of the course. Fortunately, they deal with the thorax and its contents, so that they show us the exact point which he had reached in connection with his great discovery of the blood and the true function of the heart. Harvey was so good a Latin scholar, and during his stay in Italy had acquired such a perfect colloquial knowledge of the language, that it is clear that he thought with equal facility in Latin or in English. He used many abbreviations, and whole sentences are written in a mixture of Latin and English. The first set of notes deal with the outside of the body, and the abdomen and its contents, the second portion contains an account of the chest and its contents, whilst the third portion is devoted to a consideration of the head with the brain and its nerves.

After a full discussion of the situation and functions of the various parts of the abdominal viscera, he passes on to the thorax and enunciates his memorable discovery in these remarkable words,

"It is plain from the structure of the heart that the blood is passed continuously through the lungs to the aorta as by the two clacks of a water bellows to raise water. It is shown by the application of a ligature that the passage of the blood is from the arteries into the veins. Whence it follows that the movement of the blood is constantly

in a circle, and is brought about by the beat of the heart. It is a question therefore whether this is for the sake of nourishment or rather for the preservation of the blood and the limbs by the communication of heat, the blood cooled by warming the limbs being in turn warmed by the heart."

Here the notes on the heart end abruptly, and Harvey passes on to consider the lungs. These few sentences, however, show that he had discovered the circulation, and that though he delayed for twelve years to make his results public he was unable to add any important fact in the interval. The College of Physicians still preserve an interesting memorial of this portion of Harvey's Lumleian Lectures. It consists in a series of six dissections of the blood vessels and nerves of the human body, which are traditionally reported to have been made by Harvey himself. The dissections are displayed upon six boards, the size of the human body, and they exhibit the complete system of the blood vessels separated from the other parts so as to form diagrams of the circulatory apparatus. They have been made with such care that one of the series still shows the semilunar valves at the beginning of the aorta.

Harvey continued his Lumleian Lectures year by year, but we know nothing more of them until 1627, when he delivered a series of lectures upon the anatomy and physiology of the human body, more especially of the arm and leg, with a description of the veins, arteries and nerves of these parts.

On February 3, 1618, Harvey was appointed Physician-Extraordinary to James I, or, in the language of his time, "The King, as a mark of his singular favour, granted him leave to consult with his ordinary physicians as to his Majesty's health," and at the same time he promised him the post of a Physician-in-Ordinary, so soon as one should become vacant. This promise he was unable to fulfill, but it was redeemed by his son, Charles I, who appointed Harvey a Physician-in-Ordinary in 1631 and remained his friend through life.

Besides being physician to the household of the king, he seems to have held similar positions in the households of some of the most distinguished nobles and men of eminence. In the year 1613 he was elected a Censor in the College of Physicians. The Censors were four Fellows of the College appointed annually, "with power to supervise, watch, correct, and govern" those who practised physic in London or within the statutory seven miles, whether members of the College or not. They were empowered to visit the shops of the apothecaries to "search, survey, and prove whether the medicines, wares, drugs, or any thing or things, whatsoever such shops contained and belonging to the art and mystery of an apothecary be wholesome, meet and fit for the cure, health and ease of his Majesty's subjects."

On December 23, 1627, he was appointed to the still more important office of the "Elect." The "Elects" were eight in number. They

were chosen from the most cunning and expert of men of the faculty of London. It was their duty, once a year, to select one of their number to fill the office of President, to appoint a Board of Examiners for those who desired to practise physic throughout England. These examinations were conducted at the house of the President, where on December 9, 1629, Harvey examined and approved Dr James Primrose, Professor of Anatomy of Paris, who soon became the most malignant opponent of his teaching.

Early in 1633 Harvey received the commands of Charles I to attend him on his journey to Scotland. Charles' tour in Scotland was fraught with the most momentous consequences, both to himself and to his kingdom. Harvey must have been in close attendance upon the King during the whole of his stay, but he probably interested himself very little in the proceedings of the Court, or in the hot discussions between the rival sects around him. We know, indeed, that he was thinking about the method by which a chick is formed within the egg, and that to solve the point he paid a visit to the Bass Rock.

The year 1645 marks the period of Harvey's severance from the Court and of his practical retirement from public life. He was now 68, a martyr to gout, childless, and suffering under a series of heavy bereavements, and he can have had little heart to re-enter upon an active professional life in London. Harvey returned to London after the surrender of Oxford, and he was succeeded as reader of the anatomical lectures by Dr Scarborough, who was elected on October 8, 1649, by the company of Barber-Surgeons of London. Dr Scarborough was knighted on August 15, 1669, and his friendship with Harvey commenced at Oxford and continued unabated until the end of his patron's life, and when, on July 28, 1656, Harvey presented to the College of Physicians the title-deeds of his paternal estate in Kent and resigned his Lumleian lectureship, the office was transferred to Charles Scarborough. In his will Harvey makes affectionate mention of his friend, and bequeaths to him his surgical instruments and his velvet gown, so that literally, as well as metaphorically, Harvey's mantle fell upon Sir Charles Scarborough, and he nobly sustained the charge, great as it was.

Dr Ent has left a striking picture of the old man at Christmas, 1650, nearly a year after the execution of the King. He states that "Harvey lived not far from the city, where he found him busy with the study of natural things, his countenance cheerful, his mind serene, embracing all within its sphere. Our Harvey rather seems as though discovery were natural, a matter of ordinary business, though he may nevertheless have expended infinite labour and study on his works. And we have evidence of his singular candour in this, that he never hostilely attacks any previous writer, but ever courteously sets down and comments upon the opinions of each."

This account brings home to us the charm of

Harvey's personality. Beloved by his family and honoured by the College of Physicians, the old man went to his grave amidst the genuine grief of all who knew him. The publication of his essay on Development in 1651 was almost his last literary effort. His love for the College of Physicians remained unabated and he gave proof of it in a most practical manner, as he was the means of procuring a library and a repository for simples and rarities for the College, and before it was completed the College voted that a statue of Harvey should be placed in their hall. This was accordingly erected and represented Harvey in the cap and gown of his degree, and, though it perished in the Great Fire of London in 1666, it was not replaced when the College was rebuilt on or near its old site in the more recent building in Pall Mall.

Harvey died at Roehampton on June 3, 1657. Aubrey says that on the morning of his death, about 10 o'clock, he tried to speak and found that he had a "dead palsy" in his tongue, then he realised what was to become of him. He knew there were no hopes of his recovery.

It would appear that Harvey died of a cerebral hæmorrhage from vessels long injured by gout, and situated rather at the base or internal parts of the brain than in the frontal lobes. Most probably the left Sylvian artery gave way, leading at first to a slight extravasation of blood, which rapidly increased in quantity until it overwhelmed his brain.

Harvey's *liber aureus* is certainly his *Exercitatio anatomica de motu cordis et sanguinis in animalibus*. The work was issued from the press of William Fitzler, of Frankfort, in the year 1628. Harvey chose Frankfort as the place of publication for his book because the annual book fair held in the town enabled a knowledge of his work to be more rapidly spread than if it had been issued in England.

The treatise opens with a dedication to Charles I couched in fitting emblematical language, and signed—"Your Most August Majesty's Most Devoted Servant, William Harvey."

In the preface he excuses himself for the book, saying that he had already and repeatedly presented to them his new views of the movement and function of the heart in his anatomical lectures.

The anatomical treatise gives in seventeen short chapters a perfectly clear and connected account of the action of the heart and of the movement of the blood round the body in a circle. A movement which had been foreshadowed by some of the earlier anatomists and had been clearly indicated by Harvey himself as early as 1616. Harvey's proof fell short of complete demonstration for he had no means of showing how the smallest arteries are connected with the smallest veins. He worked, indeed, with a simple lens, but its magnifying power was too feeble to show him the arterioles and the venules, whilst the idea of an injection does not seem to have occurred to him. It was not

until after the invention of the compound microscope that Leeuwenhoek, in 1675, described the blood vessels, though they had already been seen by Malpighi.

The first chapter of the treatise is introductory. It is a review of the chief theories which had been held as to the uses of the heart and lungs. It had been maintained that the heart was the great centre for the production of heat. The blood was driven alternately to and from the heart, being sucked into it during the diastole, and driven from it during the systole. The use of the arteries was to fan and cool the blood, as the lungs fanned and cooled the heart, for the pulse was due to an active dilatation and contraction of the arteries. During their dilatation the arteries sucked in air, and during their contraction they discharged murky vapours through pores in the flesh and skin.

Harvey begins his chapter on the Movement of the Heart and Blood with the clear statement that the heart must be examined whilst it is alive, but he says—"I found the task so truly arduous and so full of difficulties that I was almost tempted to think with Fracastorius that the movement of the heart was only to be comprehended by God. For I could neither rightly perceive at first when the systole and when the diastole took place, nor when and where dilatation and contraction occurred, by reason of the rapidity of the movement, which in many animals is accomplished in the twinkling of an eye, coming and going like a flash of lightning."

After disproving the erroneous views of the heart's action, Harvey next proceeds to discuss the movements in the arteries as they are seen in the dissection of living animals. He shows that the pulsation of the arteries depends directly upon the contraction of the left ventricle and is due to it, whilst the contraction of the right ventricle propels its charge of blood into the pulmonary artery, which is distended simultaneously with the other arteries of the body. These facts enabled Harvey to disprove the current theory that the heart's systole corresponded with the contraction of the arteries, which then became filled with blood by a process of active dilatation, as bellows are filled with air.

The broad points in connection with the vascular system being thus settled, Harvey turned his attention more particularly to the mechanism of the heart's action. He shows that the two auricles move synchronously and that the two ventricles also contract at the same time. Hitherto it had been supposed that each cavity of the heart moved independently, so that every cardiac cycle consisted of four distinct movements. The minute accuracy of Harvey's observation is shown by his record of what is in reality a perfusion experiment. He says—"Experimenting with a pigeon upon one occasion after the heart had wholly ceased to pulsate and the auricles too had become motionless, I kept my finger wetted with saliva and warm for a short time upon the heart and noticed that under the

influence of this fomentation it recovered new strength and life, so that both ventricles and auricles pulsated, contracting and relaxing alternately, recalled as it were from death to life."

We now know that this was due to warmth, to the moisture, and to the alkalinity of Harvey's saliva, so that he performed crudely, and no doubt by accident, one of the most modern experiments to show that the heart, under suitable conditions, has the power of recovering from fatigue.

Harvey formulates in his fifth chapter the conclusions to which he had been led about the movement, action and use of the heart. His results appear to be absolutely correct by the light of our present knowledge, and they show how much can be done by a careful observer, even though he be unassisted by any instrument of precision. He further states—

"The great cause of doubt and error appears to me to have been the intimate connection between the heart and the lungs. When men saw both the pulmonary veins losing themselves in the lungs, of course it became a puzzle to them to know how or by what means the right ventricle should distribute the blood to the body or the left draw it from the venæ cavæ."

Furthermore he said—

"Had anatomists only been as conversant with the dissection of the lower animals as they were with that of the human body, the matters that have hitherto kept them in a perplexity of doubt would, in my opinion, have met them freed from every kind of difficulty."

After this plea for the employment of comparative anatomy to elucidate human anatomy, Harvey proceeds to deal in a logical manner with the various difficulties in following the course taken by the blood in passing from the vena cava to the arteries, or from the right to the left side of the heart.

It is a matter of historical knowledge that Harvey's views regarding the circulation of the blood were not accepted in toto. The exact teaching of his contemporaries in London is easily accessible. One of his distinguished colleagues at the College of Physicians was Alexander Reid (born in 1586), who learnt surgery in France, was admitted to the College of Physicians in 1624, and was appointed Lecturer on Anatomy at the Barber-Surgeons' Hall, December 28, 1628, in succession to Dr. Andrewes, Harvey's assistant. For some reason Harvey's doctrines did not recommend themselves to Reid, and his Manual therefore contains the following traditional account of the heart—

"As for the heart, the substance of it is compact and firm, and full of fibres of all sorts. The upper part is called Basis or Caput, the lower Conus Mucro or Apex Cordis. When the heart contracteth itself it is longer, and so the point is drawn from the head of it. But when it dilateth itself it becometh rounder, the conus being drawn to the basis. About the basis is the fat. It is covered with a skin which hardly can be separated. In moist and cowardly creatures, it is biggest. Of all parts of the body it is hottest, for it is the well spring

of life, and by arteries communicateth it to the rest of the body. The heart hath two motions, Diastole and Systole. In Diastole, or dilatation of the heart, the conus is drawn from the basis to draw blood by the cava to the right ventricle, and air by the arteria venosa (pulmonary vein) to the left ventricle. In Systole or contraction the conus is drawn to the basis."

However, the year 1628 may fairly be looked upon as the crowning year of Harvey's scientific life. It was that in which he published at Frankfort-on-the-Main his matured account of the circulation of the blood. After its publication he was sometimes heard to say that "he fel-

mightily in his practice," for it was believed by the vulgar that he was crack-brained, and all the physicians were against him. But he lived to see his grand discovery universally accepted and inculcated as a canon in most of the medical schools of Europe, and he is said by Hobbs to have been "the only one who conquered envy in his lifetime and saw his new doctrine everywhere established."

The writer has quoted freely from "Masters of Medicine" by D'Arcy Power, F S A, F R C S, Eng., written in 1897.

Association Notes

THE ANNUAL MEETING AN IMPRESSION

"Broad sweep of uplands close on either hand
Green upon green—a thicket here and there,
Hedging the red roads winding slowly down
By checkered fields and meadows lush with grass
To where in misty blue above the town
Soft lights and colours tremble as they pass."

This thumb-nail sketch by an Island writer fairly describes a visitor's first impression of Prince Edward Island, and, travel over the Province as he may, he is never out of sight of just such a picture, and June makes cleaner and fresher, if that were possible, the face of nature here outlined. In the fifty-nine years of the history of the Canadian Medical Association this is the first in which a general meeting has been held in the smallest Province of all—itsself the cradle of Confederation.

Many feared that a meeting so large as this would swamp a meeting place so small, but industry and preparation on the part of the local profession and of the executive of the Canadian Medical Association overcame all obstacles and brought to pass a meeting which will stand unique in the annals of the Association.

Whoever received the inspiration which caused the chartering of a steamship which would sail from Montreal and act as a floating hotel for its passengers during their stay in Charlotte-town was the one who assured the success of the meeting, for, aside from easing the strain upon the local accommodation, the voyage down the river and gulf made and cemented friendships among far-removed members of the Association, which generated a homogeneous nucleus for the whole gathering and became the guarantee of a successful meeting.

Many cities of Canada have greeted the Association with open-handed hospitality, but seldom in the memory of the most blasé has a welcome to the body been so spontaneous and whole-hearted. It can readily be seen that all the medical men in a city of 12,000, or in a Province of 88,000 people, if they worked all the time, could not alone take care of a registration of 560 delegates, but they had enlisted the enthusiastic co-operation of all the citizens, and the members

and their friends had thus actually bestowed upon them the Freedom of the Province. It was indeed difficult to keep pace with the entertainment which was provided.

Very wisely, it would appear in this instance, the Executive arranged that the medical program would be carried out in general meetings only. A roll-call would have discovered but few absentees from the sessions, and the papers as a rule were chosen with a view to their general interest, and maintained a high average of quality.

It is impossible to eat one's cake and have it too, and it would not be fair to expect from papers planned for their general adaptability any records of detailed interest to men working in special fields, but in succeeding meetings to be held in larger centres the Committee would be well-advised to consider an appeal to the interest in more advanced subjects, while by no means ignoring the review of general questions. Leaving aside, however, all questions of strictly medical interest, the bringing together of more than five hundred intelligent Canadians for a common purpose, and showing to them a part of their national heritage which they had not seen before, is in itself a matter of no small importance for themselves, for each other, and for the peace and unity of Canada.

A. H. GORDON

The following letter, which is self-explanatory, has been sent to the *Journal* for publication.

MY DEAR DR. ROUTLEY

Many thanks for your kind letter telling me of the honour the Association has done me by electing me a senior honorary member of the Association. As a past President and one of its early members I have always taken a great interest in the Canadian Medical Association and am glad to hear how prosperous it is.

Hoping you will let the members know how proud I am of the honour conferred, I am,

Sincerely yours,

F. J. SHEPHERD

Montreal, July 11, 1928

Provincial Association Notes

THE BRITISH COLUMBIA MEDICAL ASSOCIATION

The annual meeting of the British Columbia Medical Association was held at Victoria on June 11th and 12th. The Empress Hotel was the headquarters for the meeting. Owing to the strenuous efforts of the Victoria Medical Society, and especially the organizing committee under the chairmanship of Dr M W Thomas, this year's meeting was a great success, preparations having been made for entertainment as well as the presentation of scientific papers and transaction of the business of the Association.

Several members brought their wives to Victoria and these were delightfully entertained. A golf tournament was organized, and Drs Lachlan MacMillan and C H Vioman of Vancouver, were the successful players, though the latter was considerably impoverished in the matter of balls owing to the somewhat unique hazards encountered on the Oak Bay Golf Course.

Three of the members of the post-graduate tour, Drs F A C Scrimgeur, V C, F H MacKay, and Andrew Hunter gave lectures on both of the days during which the meeting was held. These were fully up to the standard that they set in the meeting of the Vancouver Summer School.

On Tuesday morning a meeting of the Executive was held with twelve members present. Dr W S Turnbull, President of the Vancouver Medical Association, was also present at the meeting and spoke on the suggested closer co-operation between the Vancouver and the British Columbia Medical Associations. This was one of the most important matters taken up at the meeting, and it was strongly felt by the Executive that the time had arrived for a more business-like arrangement, from the point of view of both Associations, to reduce expenditures and to increase the efficiency of the services given to the profession. A very full discussion took place and every member of the Executive supported the idea that no stone should be left unturned to bring the two Associations closer together, even if this meant some sacrifice on both sides. The question of details it was felt had to be left for future arrangement, but it was decided to recommend to the full meeting that the British Columbia Medical Association endorse the principle of a closer co-operation and this suggestion was whole-heartedly accepted by the later meeting of the full Association. At the meeting of the Association held in the evening reports were given by the chairmen of the various committees. The Industrial Service Committee presented a remarkably full and com-

plete report, and showed a tremendous amount of work done by the business office of the British Columbia Medical Association. Contracts, Indian Department work, grants to medical men, payment of accounts, and the supplying of medical men both as locum tenentes and as permanent residents in various parts of the province, were referred to, and it could be seen in many instances how essential it is to the profession in British Columbia that there should be a strong central office keeping close watch on the hundred and one difficult problems that come up from day to day. Work has been done in regard to the Provincial Income Tax, and on the question of Coroners' fees, though this matter has not yet been satisfactorily settled. The question of Marine Hospital and Medical Services, which has been taken up by the Canadian Medical Association, was referred to this Association for a report and Dr C W Prowd's report on the matter has been published among the reports of the Federal Organization.

In the matter of the Indian Department an additional \$50,000 per year has been given by the Dominion Government, to be applied to medical services in this province, and in this matter our Executive Secretary has done a tremendous amount of work of great value to the Indian Commissioner at Victoria, Mr Ditchburn. The Auditor's report showed a decrease in expenditures over last year of \$623, a slight increase in membership, and a balance on the credit side, which is satisfactory in that it is neither too big nor too small.

The question of Health Insurance was taken up at this meeting and it was decided to appoint a committee to go fully into the matter immediately and keep the members in touch with the situation as it develops.

Eleven new members, as under, were approved and accepted: Edwin Johnston Curtis, Arthur George Elvin, William Elliott Harrison, John Allan Ireland, Thomas Campbell Michie, F P McNamee, Arthur Percival Proctor, Walter Scott Turnbull, Andrew Russell Wilson, Charles Arthur Watson, Lionel B Winch.

The following officers were unanimously elected for the ensuing year: President, Dr Wallace Wilson, Vancouver; President-Elect, Dr W A Clarke, New Westminster; Vice-President, Dr Theo H Lennie, Vancouver; Secretary-Treasurer, Dr G Lall Hodgins, Vancouver; three members of the Executive at large, Dr J McKee, Courtenay, Dr A L Jones, Revelstoke, Dr R McCaffrey, Chilliwack. The retiring President, Dr H E Ridewood, spoke on the work of the association and thanked the members of the executive for the splendid work they had done.

THE ONTARIO NEURO-PSYCHIATRIC ASSOCIATION

The Spring Meeting of the Ontario Neuro-Psychiatric Association was held at the Westminster Psychopathic Hospital, London, Ontario, on June 11th

The meeting was called to order at 3 p.m. by the President, Dr R G Armour. Dr McLean, Acting Superintendent of Westminster Psychopathic Hospital, gave an address of welcome to the members of the Association. The President then gave an interesting address on the work that is being carried on in the Ontario Hospitals.

Dr Armour dealt with the progressive spirit that is prevalent in the hospitals, some of which can be appreciated by the program of the day. He also made a plea for larger medical staffs in the Ontario hospitals, which might allow of more investigation into physical problems as well as psychiatric phenomena.

Dr R Fletcher, Toronto, read a paper, "Report of work done at the Ontario Hospital, Toronto, with special reference to Sulfoxyl Salvarsan and non-specific protein."

Dr Fletcher had been using large doses of typhoid vaccine as a non-specific protein, and had had some encouraging results in cases where the arsenical preparations could not be used. The percentages of improvements and cures in connection with general paresis is gradually climbing, some statistics passing from the thirties into forty-odd per cent. There could be no doubt that the old feeling that nothing can be done for any parietic is passing away.

Discussion was opened by Dr Crawford, Psychopathic Hospital, Toronto, and continued by Dr Fisher, London.

Dr C H Pratt, Ontario Hospital, Woodstock, then read a paper, "The treatment of epilepsy," and showed some very interesting lantern slides illustrating the use of luminal and belladonna in its treatment.

Dr Pratt's work on epilepsy is outstanding. His report contained records of exact numbers of convulsive attacks in institutional cases over periods of two to three years, and his methods were bringing under control cases that resist the older methods of treatment. By using large doses of caffeine and belladonna, the latter in doses of twenty or more minims of the tincture three times a day, he was able to increase the dose of luminal to as much as nine grains a day without any untoward effects. It was interesting to see his patients a half to one hour after one of these large doses of belladonna with small and active pupils and no dryness of the mouth.

Discussion was opened by Dr McCausland, Kingston, and continued by Drs Nichol, London, Cumberland, Woodstock, Cathcart, Ottawa, Tennant, London, and Armour, Toronto.

The meeting adjourned at 5.40, and refreshments were served in the Nurses' Home, where the members were entertained by Dr and Mrs McLean and the Staff of the Westminster Hospital.

The evening session was called to order at 7.15 p.m. by the President.

Dr Lynch, Brockville, read a paper, "Intensive use of bromides in the treatment of functional psychosis."

Dr Lynch is using as much as three hundred grains of bromides a day. He finds the sodium salt the least irritating. An example of how he administers the drug would be, one hundred and fifty grains at eight o'clock in the morning, and seventy-five grains at four o'clock in the afternoon. Sometimes this is given merely dissolved in a cup of tea. Toxic effects were observed in the first few cases that were allowed to remain in bed, but by keeping the patient up and about, particularly after the larger dose, this effect was avoided. Less trouble was experienced from rashes with these larger doses than with the more conservative amounts in common use. Indications as to what was being obtained in many different types of patients, manic-depressives, in dementia præcox, and involuntional psychoses, were the correction or relinquishing of delusions, calming of agitation, lessened bed-wetting and other soiling, and a generally more peaceful ward.

The discussion was opened by Dr G C Kidd, Kingston, and continued by Drs Robinson and Chalk of London, McLean, London, Pratt, Woodstock, Towers, London, Cumberland, Woodstock, Cathcart, Ottawa, and McCausland, Kingston.

A Round Table Conference was called to order at 8.25 p.m. and many matters of importance were discussed. The meeting adjourned at 9.30 p.m.

From time to time a journal of the proceedings of this association is published by the Department of the Provincial Secretary and distributed to the members of the profession throughout the province. It will always be found worth while reading. Members of the profession generally will always be welcome at the meetings of this association in the different places in which it meets, its aim being to form a link between the general practitioner and the psychiatrist.

"Truth is an immortal and eternal thing. It bestows, not a beauty which time will wither, nor a boldness of which the sentence of a judge can deprive

us, but the knowledge of what is just and lawful, distinguishing from them, and confuting what is unjust."

—*Epictetus*

Reports of Societies

WESTERN NOVA SCOTIA MEDICAL SOCIETY

The annual meeting of the Western Counties Branch of the Medical Society of Nova Scotia was held at Yarmouth on the twenty-ninth of May. Dr Elliott P Joslin, of Boston, was present, and contributed an important address. There was a very large attendance.

In order to facilitate matters, the first day's session was devoted entirely to the reading and discussion of papers, and all business matters were left over to an adjourned meeting held on June eleventh.

The first paper was by Dr A R Campbell, of Yarmouth, on "Surgical Diseases of the Testicle." Dr Campbell outlined the signs and symptoms of the various surgical conditions of the testicle together with the differential diagnosis. He explained that perhaps no other organ excepting the breast suffered from errors in diagnosis more than did the testicle. He sketched the histological formation and the early pathological conditions which are met with. He explained the development of the testicle and outlined Stinach and Voronoff's treatments for rejuvenation. Dr Campbell explained the treatment for tuberculous epididymitis and the differences between this and other lesions involving the epididymus and testis proper.

The second paper was by Dr Elliott P Joslin, of the New England Deaconess' Hospital, Boston, and was entitled "The Care and Treatment of Diabetics." Dr Joslin outlined the procedure which he followed at the Deaconess' Hospital, stressing particularly the necessity of attention to minute details in diabetic patients and watching for early complications and anticipating them. This he emphasized particularly in the care of the lower extremities. Dr Joslin explained how he treated diabetic gangrene, and

laid special stress on the use of insulin in all surgical conditions. Diabetes in children was particularly considered. Before insulin was discovered this was a hopeless condition but since its introduction it has changed the picture and gives new life to children so afflicted. He further showed how he administered insulin, using different places for each injection. The difference between the coma of diabetes and hypoglycæmia was explained.

At the adjourned session, Dr Farrish was again in the chair. It was decided that the Society, having already agreed that the annual meeting of the Medical Society of Nova Scotia should be held at Charlottetown, were now willing to agree to any re-arrangement that met with the endorsement of the other branch societies.

It was moved and seconded that this society go on record as heartily endorsing the program put forward by the Nova Scotia Tuberculosis Commission.

The report of the Secretary-Treasurer was read and adopted.

The election of the officers for the coming year resulted as follows: President, Dr J E LeBlanc, West Pubnico, Vice-Presidents, Dr L M Morton, for Yarmouth Co, Dr P L Belliveau, for Digby Co, Dr H H Banks, for Shelburne Co, Secretary-Treasurer, Dr Thomas A Lebbetter, Yarmouth, representatives on the Nova Scotia Medical Society Executive, Dr G W T Farrish, Dr W C O'Brien.

It was moved and seconded that the Society send a letter of condolence to the family of the late Dr A J Fuller.

Dr Lebbetter was appointed to represent the Society on the "Osler Memorial Fund" Committee.

T A LEBBETTER,
Secretary-Treasurer

The Physician—There are men and classes of men who stand above the common herd, the soldier, the sailor, the shepherd not infrequently, the artist rarely, the physician almost as a rule. He is the flower of our civilization, and when the stage of man is done and only to be marvelled at in history, he will be thought to have shared as little as any in the defects of the period and most nobly exhibited virtues of the race. Generosity he has, such as is possible to those that practice an art, never to those who drive a trade. Discretion, tested by a hundred secrets, tact tried in a thousand embarrassments and, what are more important, Herculean cheerfulness and courage.—Robert Louis Stevenson

"There are two methods of obtaining knowledge—by argument and by experiment, argument makes conclusions and forces us to agree to them, but it does not make us feel certain or so remove suspicion that the mind rests in assurance of truth, unless this be also found by experience."—Roger Bacon, *Opus Majus*, Pars VI, cap I

"Thou mayest always speed, if thou wilt but make choice of the right way, if in the course both of thine opinions and actions, thou wilt observe a true method."—Marcus Aurelius

Correspondence

The Edinburgh Letter

(From our own correspondent)

An interesting side light on the expedients of the Voluntary Hospital System is obtained once a year on "Infirmity Day." On that particular occasion, the activities of a week's endeavour to raise money in support of the Infirmary come to a climax. Battalions of collectors in every variety of fancy costume are let loose upon the city. These parade the streets, encamp upon doorsteps, enter shops, hotels, street cars, and restaurants, and even invade the inner sanctuaries of clubs. The ordinary citizen on his way to the office may expect to have a fresh money-box rattled under his nose at every few yards. As often as he appears in the street, so often may he expect to be importuned, solicited and finally effectively fleeced. The man in the street may be permitted to speculate on the practicability of an arrangement that allows highwaymen to thrust pistols in his face, permits Red Indians to threaten him with tomahawks, and sanctions Samoan natives brandishing menacing clubs over his head. It may be that the voluntary hospital system is on its last legs, if so there was no sign of its being doomed at this year's Infirmary day. The collectors by a series of hold-ups gathered more money than ever before. The culminating point was reached when a pageant about two miles long paraded the principal streets. This consisted of numerous pipe and brass bands, a series of tableaux on motor lorries, and the appearance of representatives of every branch of the community: fishermen, firemen, coalminers, shepherds in procession. The proceedings terminated in a student carnival in the Waverley Market, which was opened by Sir John Gilmour, Lord Rector of Edinburgh University, and Principal Sir Alfred Ewing.

In the end of May, Sir W. Leslie Mackenzie retired from his post as medical member of the Scottish Board of Health. Sir Leslie is proceeding to Kentucky. He has accepted an invitation to inaugurate a new hospital service which has been formed in the mountainous districts of the Alleghany region. This medical scheme has been modelled on a plan, similar to the services in the Highlands and Islands of Scotland, for the conception of which Sir Leslie was so largely responsible. Sir Leslie is to be accompanied by Lady Mackenzie, who has always taken a lively interest in Public Health matters in Scotland. The choice of Sir Leslie to inaugurate this scheme is a tribute to his success as an administrator, and would appear to be an acknowledgement of the success of the Highlands and Islands Service.

The University Court, on the recommendation of the Senatus, has approved a revised scheme of the curriculum of courses for the University Diploma in Tropical Medicine and Hygiene. This new course has been devised to meet the requirements particularly of officers of the Colonial Medical Services. The University of Edinburgh has been specially recognized by H. M. Colonial Office, as an institution in which these officers may pursue the study of tropical medicine, either on first appointment or on special leave of absence during their service.

The Annual Golf Match between the Royal Colleges of Physicians and Surgeons was played on May 21st over New Luffness Course, and resulted in a win for the Surgeons by 18 matches to 1. Certainly the Surgeons have taken summary vengeance for the Physicians' victory in the curling match last March.

The Harveian Festival was held in the Royal College of Physicians on June 1st. This event has taken place annually since 1787, when the club was founded by Dr. Andrew Duncan (senior) to commemorate William Harvey. Dr. Robert Thun, President of the Edinburgh Harveian Society, occupied the Chair, and treated a large gathering to an interesting address upon Archibald Pitcairn in relationship to Harvey. This medical scientist, in addition to being a poet and man of letters, was an ardent Jacobite politician. Largely as a result of his work in connection with Harvey's discoveries, Pitcairn was appointed Professor of Medicine at Leyden. Returning to his native country he must be regarded as the real founder of the Edinburgh Medical School. After an eloquent and arresting address the society and its guests dined in the Hall of the College.

Dr. F. A. E. Crew, M.D., D.Sc., Ph.D., has been appointed by the Court of the University of Edinburgh to be Professor of Animal Genetics and Director of the University Department of Research in Animal Breeding. The Chair is to be known as the Buchanan Chair of Animal Genetics. It was founded by a donation from Lord Woolavington, supplemented by a grant from the International Education Board, New York. Professor Crew, the first occupant of the Chair, is a graduate of Edinburgh University. In 1920 he was appointed Director of the newly created Animal Breeding Research Department. In 1927 Dr. Crew was William Withering Lecturer at the University of Birmingham, and in 1928 Milroy Lecturer at the Royal College of Physicians, London. Several books dealing with his subject have been published over his name. These include "Animal Genetics," "Genetics of

Sexuality in Animals," "Organic Inheritance in Man," and "Heredity", also he has written many scientific papers. In addition to his purely scientific pursuits, Professor Crew is Commanding Officer of the Medical Unit of the University O T C.

Edinburgh has sustained a sad loss through the death of Sir James Hodsdon, K B E, F R C S, on May 28th. For many years he took a prominent part in the medical life of the city. Born in Bermuda in 1858, he graduated M D at Queen's University, Belfast. In 1883 he obtained the Fellowship of the Royal College of Surgeons, and ultimately became President of the College during the stirring years of 1914 to 1917. He has represented his College since 1906 on the General Medical Council. During the War he did valuable work on the Staff of the 2nd Scottish General Hospital, the Emergency Committee, and on various Appeal and Pension Boards. As a hospital surgeon, a teacher and administrator, his work was of merit and importance. His death comes as a great personal sorrow to those with whom he was associated in these and other capacities.

GEORGE GIBSON

23, Cluny Terrace, Edinburgh

THE PRODUCTION OF A NEW TUMOUR

To the Editor:

I have read with much interest the paper of Dr. Briebner in your issue of April, 1928, p. 397.

There are, however, some erroneous statements made in regard to the literature, to which it is necessary I should call attention.

The statement is made that "Warburg (*Biochem Zeit.*, 1923, cxlii, 317) had shown that tumour and placenta are comparable metabolically, in that they both have a high aerobic and anaerobic glycolytic activity."

This is wrong. The paper, to which reference is made, contains neither the word "placenta" nor any synonymous term. Negelein, working in Warburg's laboratory later, examined the maternal mucosa and the fused amnion and chorion as we believe, but not the invading chorionic epithelium, and found no such metabolic result as that which Dr. Briebner ascribes to Warburg. Indeed, Warburg has stated that placenta (presumably meaning chorionic epithelium) does not behave like malignant tissue.

As a matter of fact, Murphy and Hawkins (*Journ Gen Physiol*, 1925, viii, 115), working with Warburg's method, were the first to show that the "placenta" behaves like malignant tissue in respect of aerobic glycolysis, but doubtless they were acquainted with our work and views, previously published, regarding the malignant nature of the chorionic epithelium.

We ourselves (*Brit M J*, 1926, i, 687, *Idem*,

1928, i, 126, and *J Obst & Gynec Brit Emp*, 1928, xxxv, 233), have demonstrated that the chorionic epithelium possesses the power of aerobic glycolysis, and we have fully discussed the whole subject. Loeser, also, (*Centralb f Gynäk*, 1926, l, 1819), has published some in conclusive evidence on the same subject.

There is no doubt, however, that we have been the first definitely to demonstrate from every point of view that the chorionic epithelium is a malignant tissue, and to base our work on malignant disease on our findings in this respect.

I wonder whether Dr. Briebner can obtain tumours without using chick embryo as well as placental tissue, for our own attempts to produce malignant tumours from chorionic transplants have not so far given positive results.

W. BLAIR BELL

Liverpool, England, June 14, 1928

ON THE DIAGNOSIS OF HYPERTENSION

To the Editor:

As a diagnosis of hypertension seems to be rather prevalent these days, it seems to me there should be some unanimity among medical men as to what should be told patients about their blood pressure.

Personally I find elderly people, who have consulted a doctor while away on a visit, or have gone to a different climate for the winter, return with a definite figure of their blood pressure reading, always the systolic. They come regularly afterwards to have their blood pressure taken, and demand to know the figure, which, unfortunately for their own peace of mind is usually not much reduced. They are aware that high blood pressure may be a forerunner of apoplexy, and they spend the remaining years of their life in dread of an impending calamity.

This worry may do as much towards keeping the blood pressure high as our treatment in getting it reduced. Before the days of the sphygmomanometer old folks spent their last days happy and content, unaware that they were on the brink of a precipice. Now they know their danger, and even if we prolong their life a year or two by proper treatment, they know that we are not getting them far away from the edge of the precipice.

Instead of diagnosing high blood pressure as a disease and telling patients how high it is, if we went farther, and tried to find the cause of the hypertension, treated our patients for the cause, kept track of the blood pressure, systolic and diastolic, as an aid in prognosis and treatment, we would be doing our patients a kindness. We would also relieve ourselves of the necessity of explaining to them that a sudden drop in blood pressure would be a greater calamity than if it remained stationary.

My purpose in writing is to try and get some

helpful discussion on this question. You might bring it before the readers of the *Journal* in some way so that a fairly unanimous opinion may be reached as to whether or not it is better to tell patients how high their blood pressure is.

Yours sincerely,

W A CHESTNUT

Moosomin, Sask

June 25, 1928

P S—If you think it is better to tell them I am willing to fall in line

W A C

FOUR CENTURIES OF MEDICAL HISTORY IN CANADA

This letter, which is self-explanatory, has been sent by the writer to the *Journal* for publication, with the concurrence of Dr Heagerty. Dr Heagerty's statement on the matter appears also (Ed)

Dr J J Heagerty,

Department of Health, Canada,

Ottawa, Ontario

Dear Dr Heagerty

When the announcement of your book, "Four Centuries of Medical History in Canada," arrived I immediately sent for a copy and have read it with great interest. At the request of the editor I have reviewed the work for *The Canadian Nurse*, the official organ of the Canadian Nurses Association. May I congratulate you very heartily on the historical value of your book. The story of the founding of the first hospitals in Canada deserves to be published to the world and in your volumes that story has been well told.

When one realizes the immense amount of time and labour expended by you in the preparation of this work, the sifting over multitudinous documents in the Dominion Archives and elsewhere it seems almost ungracious to interject a word or two of adverse criticism. Coming from the position you occupy, however, your book has an authority which might be lacking had it been written only by one of the rank and file of the profession. The criticism is this that, no doubt inadvertently, there has been insufficient recognition of the achievements of the west and when the merits of the east have been lauded as they are that thereby an injustice has been done to Western Canada and its institutions.

May I state my points. Part 5 of the book deals with medical schools. On page 56, volume II, occur these words "In 1903 the University of Saskatchewan offered a partial course in medicine, and in 1906 the University of Alberta did likewise. In the year 1910 there were eight medical schools in Canada. These were studied by the Carnegie Foundation for the Advancement of Teaching, a report of the study being published on April 16th of that year. Each school was visited and the findings

approved by two or more independent observers. While some of the schools were unequivocally condemned for lack of equipment and hospital teaching facilities, others, notably Toronto and McGill, received well merited praise." Then followed extracts from the report dealing with these two schools. The next paragraph continuing, "Since that report was made both Toronto and McGill have made further progress which places them in the ranks of the foremost medical schools of the continent. The course in Canadian universities is now a six-year one."

While no one will deny that Toronto and McGill rank deservedly with the leading medical schools of this continent, it is only in accordance with the facts to point out that since 1923 the Medical Faculties of both Manitoba and Alberta Universities have received Class A, the highest, rating. The Education Number for the *Journal of the American Medical Association*, August 16, 1924, gives the rating of all medical schools in the United States and Canada. In the list of Canadian schools Alberta and Manitoba are shown as Class A along with Toronto and McGill. In 1923 the University of Alberta offered a complete medical course and already two or three classes have been graduated from that institution.

To my mind it does seem unfair to Manitoba and Alberta to make reference in a work published in 1928 only to the 1910 report of the Carnegie Foundation and not to quote from subsequent reports.

Part 6 of your work deals with Hospitalization. On page 192, volume II, under the heading Toronto General Hospital occur these words "The hospital is proud of the record and reputation of its Nurses Training School, which in 1926 graduated 84 nurses, being the largest class ever graduated from a Canadian hospital." The class of nurses graduating in 1925 from the Training School of the Winnipeg General Hospital numbered 95, and the class graduating in 1928 numbered 96.

As evidence of the achievements in medical history in Western Canada may I point out the following:

A psychopathic hospital was built on the grounds of the Winnipeg General Hospital in 1919, the first to be established in Canada.

In 1910 the first Social Service Department in connection with a Canadian hospital was inaugurated at the Winnipeg General Hospital.

In January, 1921, a prenatal clinic was organized at the Winnipeg General Hospital and in April, 1927, a post-natal clinic.

Manitoba led the way among the other provinces in the establishment of District Health Nurses by the late Hon. Dr J W Armstrong, vide *Canadian Medical Association Journal*, vol XXII, No 4, April, 1928, p 475.

May I also point out that in vol II page 285, the name of the superintendent of Brandon

Mental Hospital should be Dr C A Baragat, and not Barraghei as printed

In closing may I add that the foregoing criticism is not made in any spirit of sectionalism. Osler warned us against Chauvinism and that is a warning which Canada with its immense distances and sparse population particularly needs to heed. It is only because I have a great admiration for the services you have rendered to the cause of medical history in Canada that I wish in all kindness to point out the seeming inaccuracies or lack of proportion in your book, which may be corrected in a later edition.

Will you kindly accept the gratitude of a Canadian physician

Yours sincerely,

ROSS MITCHELL

To the Editor

I wish to thank Dr Mitchell for his letter of appreciation of "Four Centuries of Medical History in Canada" and to acknowledge my indebtedness to him for pointing out certain omissions and apparent lack of proportion in those chapters treating of the West and the Province of Manitoba in particular.

The lack of proportion to which Dr Mitchell makes reference is more apparent than real. It is self-evident that the records of institutions which have been in existence for a period of three hundred years or more, such as those of the East, will of necessity contain more historical material than institutions that have come into existence within the past few years, such as those of the West. Eastern institutions, on account of their age, offer more in the way of historical material than those of the West, and to them, therefore, more space has been afforded.

I am sure that the readers of "Four Centuries of Medical History in Canada" will appreciate the impossibility of doing full justice to each and every medical institution in Canada, of

which there are hundreds, within the scope of two short volumes. When, in addition, one considers the tremendous amount of ground that was covered, the difficulty of eliciting every fact in connection with such institutions will be only too evident.

It is to be regretted that in the chapter on medical schools the impression was created that a comparison was made of the relative merits of existing schools. Such was not my intention. In writing so fully of McGill and Toronto, I wished only to give a word of well-merited praise to two of the oldest and foremost schools of Canada—two schools that compare favourably with the best anywhere.

A reference to the chapter on the University of Manitoba, which concludes with the following words—

"The University of Manitoba offers facilities for undergraduate medical training equal in all essentials to that of any Canadian school, and promises, as in the past, a steady advance in modern educational methods and continually widening opportunities for medical research,"

shows clearly that I was fully appreciative of the high professional standing of that school. Several visits to the western schools have convinced me of the great strides that are being made by those young institutions, and I fully realize that in respect of medical education the East will have to look to its laurels. If I have dwelt at greater length upon the older medical schools and institutions, it is because they offered more fertile ground for research, and to the student of history the older institutions make a more insistent appeal.

I am nevertheless fully seized of the importance of Dr Mitchell's kindly and frank letter, which was so evidently written in a spirit of helpfulness, and I am grateful to him for the valuable suggestions he has made.

Yours very truly,

J J HEAGERTY

Ottawa, July 13, 1928

"The physician should be of a tender disposition, of wise and gentle nature, and more especially an acute observer, capable of benefiting every one by accurate diagnosis, that is to say, by rapid deduction of the unknown from the known. And no physician can be of tender disposition if he fails to recognize the nobility of man, nor of philosophical nature unless he be strengthened by God's guidance, and he who is not an accurate observer will not arrive at a correct understanding of the cause of any ailment."—Nizami Arudi, Court Poet of Samarcand

"We ought to choose both a physician and a friend, not the most agreeable, but the most useful."—

Epictetus

"A wise man will hear, and will increase learning, and a man of understanding shall attain unto wise counsels."—*Proverbs of Solomon*, I, 5

"It is the glory of God to conceal a thing, but the honour of kings is to search out a matter."—*Proverbs of Solomon*, XXV, 2

Topics of Current Interest

POST-OPERATIVE TETANUS

The following abstract from the *British Medical Journal* (1928, 1, 937,) is a digest of a report on post-operative tetanus by Dr T J Mackie, Professor of Bacteriology, University of Edinburgh. The importance of the subject cannot be over-emphasized.

"The occurrence of a series of cases of post-operative tetanus in an institution led the Scottish Board of Health to request Dr T J Mackie, Irvine Professor of Bacteriology in the University of Edinburgh, to investigate the matter. Since this infection has in the past been associated with catgut, Professor Mackie was asked at the same time to report also upon the effectiveness of the means employed for sterilization of catgut in its manufacture, storage, and use in hospital, the dangers attendant on its use in surgery, and the best available means for effective sterilization during manufacture, storage, and use in hospital. The report of this inquiry has now been published by the Stationery Office, at the very low price of 1s. Professor Mackie, who was assisted in the inquiry by Dr G S M'Lachlan, lecturer in bacteriology at Edinburgh University, believes that the investigation has not only elicited data of the utmost significance in regard to the whole problem of post-operative tetanus, but has also led to an extended study of preventive methods which deserves the most careful attention. The Scottish Board of Health expresses its full agreement with Professor Mackie's assessment of the importance of the facts now published.

INCIDENCE AND ETIOLOGY

The report opens with references to the literature showing that post-operative tetanus has been commonly attributed to catgut, though cases have occurred in which this material was not employed, and auto-infection was incriminated. The valuable suggestion is proffered that information should be collected systematically regarding the incidence of post-operative tetanus in all the general hospitals in Great Britain, since at present it is probable that many cases are not published. It is well known that *B. tetani* occurs as a commensal organism in the alimentary canal of various herbivorous animals, including the sheep, from the intestines of which surgical catgut is prepared. Other anaerobic sporing bacilli capable of producing serious wound infections are also found in the intestine, and the conditions prevailing in abattoirs from which the raw material for making catgut is obtained render contamination very easy. Subsequent sterilization of the catgut is a particularly difficult matter owing to the resistant powers of the tetanus spores. Post-operative infections by other sporing bacilli have also been reported, and

this emphasizes the difficulty of adequate sterilization of the catgut. During the period in which the cases of post-operative tetanus occurred at the institution in question, the surgical catgut employed was supplied almost entirely from one source, mostly in the form of "dry strings," which had already undergone some measure of sterilization but were subjected to further bactericidal treatment before being used in operations. During the investigation this supply of catgut was stopped.

CLINICAL DETAILS

Of the eleven cases of post-operative infection in the institution considered in the report one had occurred so long ago as 1923, in no instance was it possible to trace any connection between the catgut used for the various patients, and the operations in the more recent cases were separated by intervals of twelve, nineteen, nine, and seventeen days. The highly significant fact was elicited that in gynæcological repair operations a considerable amount of catgut remained embedded in the tissues, it was estimated by one surgeon that approximately 69 inches might be so left after a repair operation for complete prolapse of the uterus. Moreover, in such operations it is a common practice to employ the thicker gauges of gut. Though *B. tetani* was not always demonstrated, there was little doubt about the diagnosis in any of the patients in view of the clinical and pathological data.

In the whole series there were nine cases of definite tetanus, one of gas gangrene, and one of a sporing anaerobe infection with muscular spasms. Ten different surgeons were concerned, and six operating theatres. All the patients died except one, in whom tetanus supervened after a repair operation for a retroverted uterus and a deficient perineum. The incubation period in this case was fourteen days, as contrasted with incubation periods of seven to twelve days in the fatal cases. The time of death after the onset of tetanus ranged from a few hours to five days. *B. tetani* was demonstrated in two cases, tetanus-like organisms were found in two, and other sporing organisms in two cases. No organisms were isolated in one case, and in two others no bacteriological examination was performed. Negative bacteriological findings are admittedly of little significance in the diagnosis of tetanus cases. Five of the nine cases occurred after operations in one theatre which was on the ground floor and close to a main corridor. Constructional work was proceeding in its neighbourhood, but no further evidence was obtained indicating that these local conditions were concerned in the infection. The possibility of auto-infection was carefully considered, but this

explanation had to be dismissed in the absence of data

CONTAMINATED CATGUT AND TETANUS

Professor Mackie mentions that the preparation of the catgut included (1) twelve hours' immersion in a watery solution of mercury biniodide, (2) heating at 160° C for one hour in oil, (3) heating in anhydrous spirit in a Jellett's sterilizer in boiling water for one and a half hours, (4) storage in an antiseptic fluid containing a mixture of mercury biniodide and other antiseptics. The technique of the last three procedures was carefully reviewed, and no evidence was obtained of any carelessness or inexactitude. The dry catgut strings were tested, and were found to contain sporing anaerobic bacilli of the group to which *B. tetani* belongs, these (*B. tetani* and *B. mesentericus*) were used for testing purposes, and it quickly became obvious that exposure for twelve hours to the watery solution of mercury biniodide could have but little effect. A certain proportion of the spores of *B. mesentericus* survived heating in oil at 160°, and the margin of the destruction of *B. tetani* was very narrow. The ineffectiveness in this respect of heating in a Jellett's sterilizer was completely demonstrated, and spores remained viable finally after storage in the mixed antiseptic solution. In only one procedure was *B. tetani* destroyed. Intermittent sterilization in heated oil was tried but was found to ruin the catgut, as did also streaming steam sterilization and exposure in an autoclave to superheated steam. The efficiency of very many chemical bactericides was tested, hydrogen peroxide and iodine water proved to be the best, but the action of some reputed bactericides was found to be surprisingly feeble. It was concluded finally that catgut "ribbons" could best be sterilized by immersion in hydrogen peroxide (10 vols) for twelve hours, the catgut strings spun from these ribbons being further exposed for fourteen days in iodine water. These procedures, which do not damage the catgut, can be employed in factories, it is suggested that, subsequently, the strands should be passed through two changes of spirit to remove the iodine, and be stored in 50-75 per cent alcohol containing 0.1-0.2 per cent iodine. It is added that these processes should be controlled in operation by bacteriological examinations.

ENCEPHALITIS LETHARGICA

The insidious nature of encephalitis lethargica, the difficulty of diagnosis, the high death-rate of the disease, and the low proportion of cures effected are points emphasized in a report on this malady issued recently by the Ministry of Health, the work of Mr. Allan C. Parsons, M.R.C.S.

Among the points emphasized are

"The disease is still a comparative novelty and its onset is often so insidious that it attracts no attention even from the patient himself

"Since 1919 no fewer than 14,321 cases have

been notified, and 6,477 deaths are registered as having been due to this cause

"The proportion of those who recover from the acute attack sufficiently to pursue their usual occupation with little incapacity is only about 25 per cent."

Records show that a fatal ending to the disease is more frequent among patients who are attacked at the two extremes of life

"There is probably no infectious or contagious disease in the country which produces so much consequent ill-health and disablement," the report adds

"If the total number of those who are annually maimed by encephalitis lethargica is an insignificant proportion of the general population, the individual victims of this disease are often conspicuous by reason of their peculiar plight

The wage-earning husband, known to his original employer as a capable and intelligent workman, who loses job after job and eventually drifts into a Poor Law institution or an asylum as a case of post-encephalitis is pitiable enough, equally disastrous to the home is it when the disease selects the housewife and so alters her character and outlook that, from being, perhaps, the intelligent mainstay of the home, she now becomes lethargic and melancholy, incapable of attending to her own needs, still less those of her husband and children

The results of the disease on children are certainly peculiar and deplorable in many cases, and cause considerable anxiety where the child's education and even his whole future are at stake. There is something diabolically malign in an infection which can transform a studious, well-behaved, and popular schoolboy into a lazy, vicious little terror, not fit for the company of his school-mates, and quite beyond the control of his parents at home. Most pathetic of all, perhaps, is the dribbling 'old man of 15 or so, who sits hunched up in his chair, stiff and impassive, slowly dying of Parkinsonism'

Existing measures are not altogether sufficient or suitable for many of the patients left seriously disabled, and it is held that the proper repositories for adult patients who develop mania are the certified mental hospitals. Juvenile patients placed in reformatories and industrial schools are wont to impose a great strain on the staffs

It is also difficult to find refuges for the 'troublesome and incorrigible children of older age' who, while they do not come in conflict with the law, are a source of anxiety and distraction to relatives. For a small minority of sufferers the vigorous regime of prison life for a time has been found to be the best form of treatment

There is at present no specific or efficacious remedy for encephalitis lethargica" (Recent Report of the Ministry of Health, London, Eng.)

INHERITANCE OF MENTAL DEFECT

The following letter of inquiry and the answer thereto are taken from the *British Medical Journal*, 1928, 1, 823

Sir,—Any editorial pronouncement in the *British Medical Journal* of necessity carries such weight that I am tempted to invite your attention to the annotation in your issue of April 21st (p 680) on sterilization of the feeble-minded in Alberta, where this sentence occurs "Scarcely any fact is more securely established than that it is only a small, almost negligible, minority of mentally defective persons who are the offspring of parents themselves certifiably mentally defective" On the other hand, I read in a paper on heredity of feeble-mindedness by H H Goddard, Vineland, N J (reprinted from the *Eugenics Review*, April, 1911), with regard to one single family, "Since this was written this family has been further investigated, with the result that we now know the facts concerning 319 members, of whom 119 are feeble-minded, with only 42 known to be normal" Can you assist me in reconciling the two statements—
—I am, etc,

D S DAVIES, M D

The two statements to which Dr Davies directs attention are not contradictory. It is true that where both parents are mentally defective the offspring are almost certainly mentally defective also, and that even where one parent only is mentally defective, some of the offspring are likely to show the same characteristics. Nevertheless, it is true also that in any generation only a small proportion of mental defectives are the children of parents who themselves are certifiably mentally defective, the overwhelmingly larger proportion being the children of apparently normal parents, of "carriers" who themselves are normal, or of those who suffer from mental or nervous instability, or from psychoneuroses or a mild degree of mental abnormality not certifiable. It follows that, for the purpose of eradicating or preventing the spread of mental deficiency, the sterilization of a small number of feeble-minded persons would be ineffective. Attention may be again directed to the pamphlet on *Sterilization and Mental Deficiency* published by the Central Association for Mental Welfare

AVERTIN

In a recent lecture,* on the trend of thought in the art of therapeutics, Dr W E Dixon described a new type of general anæsthetic. This was a tribrom-ethyl alcohol, known by the trade name of "avertin," the action of which had been determined precisely by Straub

* *Brit M J*, 1928, 1, 896

"It was a solid substance which at body temperature dissolved only to about 3 per cent in water, but if more concentrated solutions were required it could be employed in a suspended form. To produce general anæsthesia in a patient weighing 11 stone about 10 grams of this substance was administered per rectum, this was rapidly absorbed—indeed, considerably more rapidly than water or saline solution—and the patient was anæsthetized and ready for the surgeon within ten minutes. With this anæsthetic operations had been performed lasting two hours or more without pain or any subsequent discomfort to the patient, and a considerable clinical literature was already available. At first, accidents happened after using it, but since the mechanism of its action had been better understood these had entirely disappeared. The drug after absorption acted on the central nervous system like the commoner anæsthetics, but within a few hours it was completely broken up in the body, the bromine being converted to sodium bromide. With an anæsthetic dose of 10 grams about 11 grams of sodium bromide was produced, and such an amount led to sleep lasting, perhaps, for thirty-six hours after the operation had been completed. The proportion of bromide excreted depended upon the amount of sodium chloride in the blood, and varied with it, it was well known that under normal conditions when the chloride was constant the excretion of bromide was very slow, and, after a single dose, could be detected in the urine for several days. It was a simple matter, however, to get rid of this excess. In the case under consideration after the operation had been completed the excess of bromide should be eliminated by increasing the excretion of chlorides, this was effectively achieved by injecting from 5 to 10 grams of common salt, suitably diluted, into the rectum. One objectionable feature of this form of anæsthesia, as indeed of other forms of anæsthesia, was the production of some degree of acidosis. To combat this it was advisable to dose the patient before operation with sodium bicarbonate. The great advantages of this method of producing anæsthesia were obvious. The ease and certainty of producing the desired effect in a short time and for a long period, the absence of discomfort during administration, and the general comfort of the patient for several hours after the operation was completed, were some of them."

NARCOTIC PLANTS

In the appropriate setting of the old Physic Garden at Chelsea on June 7th, Dr W E Dixon, F R S, Reader in Pharmacology at the University of Cambridge, delivered a Chadwick Lecture on the subject of narcotic plants. It was an interesting discourse on the various specimens (in the green leaf) which were on the table in front of him, and was lighted up by a genial philosophy. One of Dr Dixon's observations was the curious fact that all over the world the national beverages

containing caffeine were dependent upon plants without any characteristic smell or taste. Of all the alkaloids, he said, caffeine was the most widely used by man. It was found in the leaves and beans of the coffee tree, in tea, and also, in small quantities, in cocoa. It might be said that tea, coffee, and cocoa were not narcotics, but that was because they were not taken in large enough quantities. People of all races seemed to crave for something which exerted on the brain a mild narcotic influence. This craving might be understood among highly civilized peoples, accustomed to work or play at high pressure and subject to the strain of modern life. In such circumstances anything might be seized upon which prevented the exercise for the time of the higher faculties of the mind, but why should the primitive people in Northern India smoke Indian hemp, which also produced a narcotic effect on the nervous system? To some extent it was explained, as was the taking of opium, as a social function. The natives sat round in a ring and practised this indulgence, passing into a state of languid ease, obtaining an exalted sense of their own superiority, and losing their relationship to time and space, so that the minute became an hour. Such was the result which followed the use of the essential oils exuding from certain plants. Often these oils were closely allied, though the plants producing them were very different. Who would imagine that attar of roses, eucalyptus, and turpentine had much in common? Yet when any of these was taken by the mouth the person taking it smelt of roses. In the days of imperial Rome the maidens used regularly to take a drop of turpentine so that the fragrance of the queen of flowers might cling about them. Another essential oil of very powerful properties was exuded from the nutmeg, and in the early days of tea drinking in this country the nutmeg grater was an accessory to the teapot, a little of the aromatic kernel being used to give a fillip to the tea. But, of course, the outstanding example of the narcotic plant is tobacco, whose innocent leaf Dr Dixon exhibited to his audience. Incidentally, he said, it was a fortunate thing that we did smoke tobacco and not eat it or inject it. This led him on to the generalization that in all these matters, so long as we kept away from the chemist, we were tolerably safe. Who ever heard of the juice of the vine doing any serious harm until the chemist came on the scene and practised his distillations? With opium, again, the great mischief was not done until the chemist came along and extracted its chief narcotic principle, morphine, and offered the hypodermic needle. In the same way, when tobacco was used for smoking it was relatively harmless, although Dr Dixon emphasized the evil effects of inhalation, pointing out how the CO fixed the hæmoglobin, and how even the non-smoker who had the misfortune to ride in a full-blast smoking carriage with the windows closed suffered with the guilty and had a certain percentage of his blood put out of action. But of nicotine it must

be said that its effects were marvellous in that it seemed at the same time to soothe the irritability of the supersensitive and to stimulate the dull and apathetic. How to correlate those two actions was a task which must be left to others. On the general question of tobacco smoking and of narcotic indulgence Dr Dixon remarked on the sad paradox that we seemed to get our chief pleasures in life by escaping out of life. But in smoking he thought there were some values not often considered—for example, the ritual of smoking, the lenitive effect of its rhythms, and the half-unconscious occupations it afforded—*Brit M J*, 1928, 1, 1038

MACALISTER LECTURE ON MEDICINE IN ART

The second annual lecture in memory of the late Sir John MacAlister, Secretary of the Royal Society of Medicine, was delivered at the London Temperance Hospital, under the auspices of the London Clinical Society, on June 7th, by Sir Berkeley Moynihan, Bt, President of the Royal College of Surgeons. It was a popular lecture to which nurses and a number of the lay public were admitted, and was on the subject of "Medicine in Art." Substantially it followed the lines of the lecture which Sir Berkeley Moynihan gave last autumn to the St Pancras Division of the British Medical Association. He began with the gargoyles of Notre Dame and the "Lincoln imp," and showed what interest there was in the curious deformities, no doubt shaped direct from models by the mediæval sculptor, to those who viewed them with an eye trained in medicine. Incidentally, these figures often carried horns on the head, and there was also a horn on the head of the most majestic sculptured figure in the whole world—the figure of Moses by Michelangelo, so badly placed in the church of San Pietro in Vincoli at Rome that few people realized what a masterpiece it was. The horn on the top of the head of Moses was supposed to be due to a misreading of a passage in the Vulgate. The most famous of all gargoyles was to be seen in the church of Santa Maria Gloriosa at Venice, and was the subject of an exquisite passage by Ruskin, in which he lamented the leering wickedness, the extreme of debasement, which it portrayed. But when Charcot visited this church and saw the gargoyle he said at once that it was exactly the kind of hystero-epileptic familiar to the Salpêtrière. The hystero-epileptic was considered in the Middle Ages and earlier to be the victim of "possession," and the image of him was put especially on the roofs and towers of sacred buildings to suggest that evil spirits had been driven out of the church. Another deformity familiar to very ancient artists was evidently achondroplasia, witness the representations of the great god Ptah of Egypt and Bes of Memphis—the large-headed goggle-eyed dwarf, with the short arms, the gross body, and heavy buttocks. Sir Berkeley Moynihan touched on the repre-

sensation of diseased persons in some of the great pictures by Raphael and others, and of the emotional expressions in the works of Velasquez, and he made the general remark that often some quite inferior artists, whose names were scarcely known to all, were far more correct in their details of subjects suffering from disease or deformity than were the great masters, obviously because the former stuck more closely to their models. He confessed that of all the pictures he had ever seen in Continental galleries the one which fascinated him most, and the one which he most coveted, was "The contemplation of St Jerome" in the Louvre. The Louvre authorities were said to have refused to allow this picture to be photographed, but a 100-franc note and the promise of another produced the photograph which he exhibited to the audience, it conveyed, however, little or nothing of the power of the original. In showing some photographs of mediæval statuary, Sir Berkeley Moynihan said that it was the fashion to deride many antiques to-day from the point of view of anatomy, but he believed this view to be entirely mistaken, and he instanced to the contrary the "Dying Gladiator," which brought into play in a masterly manner the accessory muscles of respiration. He concluded with some ancient works of art representing primitive surgical operations, and mentioned that the first representation of a surgical operation in a work of art in Europe—there were earlier examples in Egypt and in Asia—was a fresco at Pompeii—*Brit M J*, 1928, 1, 1044

OBSCURE DENTAL SEPSIS

To the onlooker in medicine few things have been more impressive in recent times than the awakening of medical interest in dental and tonsillar sepsis as factors in obscure systemic infections. That there has been a gradual change of attitude on the part of the family medical attendant towards his patients' teeth will scarcely be denied. How many doctors fifteen years ago thought of toxic absorption from a tooth socket when treating a case of sciatica or of unexplained pyrexia? In the early

days of enlightenment pyorrhœa alveolaris was thought to be of prime importance, now it is apical sepsis that holds the centre of the stage, and the pulpless tooth—the "filled dead tooth"—is increasingly recognized as a menace to health. Bit by bit the evidence has been sought for, and pieced together, incriminating hidden dental sepsis as (to say the least) a predisposing cause of general disease. The fruits of the pioneer work of Dr William Hunter have thus in the course of a few years become a common place of medical practice. In this advance radiography has been of inestimable value. It is true that there is still a good deal of controversy about the interpretation of the x-ray appearances round the apices of pulpless teeth, and that all dental surgeons are not yet agreed as to the treatment of such teeth, but with improved technique and growing attention to the subject knowledge is accumulating. Fresh light on the problem, leading to something in the nature of standardized procedure, may be expected in the near future if odontologists and radiologists and pathologists continue to work hand in hand, but it is all-important, we think, that physicians and surgeons and general practitioners should regard themselves as essential members of the team. That the ophthalmologist also is concerned in this matter was preached many years ago by Mr William Lang, who had noted and reflected upon the close connection between some eye infections and dental sepsis, and at the congress last April of the Ophthalmological Society of the United Kingdom Mr A F McCallan, when discussing the ocular changes observed in association with focal sepsis, reported that one in five of a consecutive series of private patients coming merely for refraction were found on radiographical examination to have apical abscesses. In short, as Dr Patrick Watson-Williams wrote the other day, at the end of his paper on nasal and oral sepsis in the etiology of gastro-intestinal and pulmonary diseases, "in medicine there is but one field which ever calls for team work"—*Brit M J*, 1928, 1, 1036

"Let the first satisfying of appetite be always the measure to you of eating and drinking, and appetite itself the sauce and the pleasure. Thus, you will never take more food than is necessary, nor will you want cooks, and you will be contented with what ever drink falls in your way."—*Epictetus*

"Crafty men condemn studies, simple men admire them, and wise men use them, for they teach not their own use, but that is a wisdom without them and above them, won by observation."—Lord Bacon

Abstracts from Current Literature

MEDICINE

Vingt Années d'Expérience de l'Endocardite Infectieuse à Evolution Lente (Twenty Years' Experience with Chronic Infectious Endocarditis) Syllaba, L, *Annales de Médecine*, 1928, xxiii, 430

The malady studied and analyzed by Syllaba in this paper is characterized by a typical clinical evolution, by, frequently, positive blood cultures, and by a fatal issue. It was known to Osler in 1885, and was described by him under the name "chronic infectious endocarditis." It was separated from the other endocarditides, on bacteriological grounds, by Schottmüller in 1910.

Syllaba bases his conclusions on a very full study, over some years, of 46 cases, in 33 of which the clinical diagnosis was confirmed by autopsy. In 17 cases examined bacteriologically, 10 (59 per cent) showed streptococci in the blood. Commenting on the bacteriological findings, Syllaba considers that more stress should be laid on the clinical course and post-mortem findings. Chronic infectious endocarditis, in his opinion, is a septic condition, tending towards death, to be distinguished from a chronic benign endocarditis with bacteriæmia and without metastases, tending towards healing. The disease is of slow evolution. It may last weeks, months, or even a year or two. Fever may last weeks and may be intermittent. Its duration has no particular importance in the matter of diagnosis. The chief feature in the clinical picture is the repeated occurrence of emboli and metastases. In the presence of embolic manifestations a negative blood culture should have no weight.

The following points are of value in arriving at a correct diagnosis: (1) A history of one or more attacks of acute rheumatism, with the occasional development of signs of cryptogenic septicæmia, should suggest the possibility of chronic endocarditis, (2) The presence of severe anæmia with a sub-icteric tint of the skin (*café au lait*), (3) The appearance of a diastolic murmur, perhaps transitory, at the aortic or mitral orifice, (4) Hypertrophy of the spleen (usually present), (5) Cutaneous hæmorrhages, pemphigus, erythema, circumscribed and fleeting œdema, (6) Epistaxis, hæmoptysis, or hæmatemesis, (7) Pain in the thorax or abdomen (from infarction), (8) Pain in the limbs, most frequently periarticular, (9) Retinal hæmorrhages, (10) The sudden onset of aphonia with stridulous respirations, (11) Hæmaturia, (12) Cultures of the blood and urine, (13) Monocytosis in the blood with a deviation to

the left of the nuclear index, (14) Gangrene of one of the extremities from arterial occlusion, (15) Hemiparesis, hemiplegia, fleeting aphasia, etc.

In spite of this imposing list of suggestive features the diagnosis will still sometimes be in doubt. The features detailed above are indications of the presence of a septicæmia, they do not necessarily indicate endocarditis. The final test comes in the daily careful observation of the clinical course. Changes in the heart function, occurring under observation, will be of paramount importance.

A. G. NICHOLLS

Two Cases of Hæmaturia Caused by Insulin Treatment Laurence, R. D., and Hollins, A. S., *Brit. M. J.*, 1928, i, 977

The production of hæmaturia by insulin treatment is rare enough to make it worthy of note. The authors give details of two such cases. The first was that of a youth of nineteen years, who developed mild diabetes in August, 1927, which was controlled by diet alone. On November 7th he developed tonsillitis and two days later was admitted to hospital in a pre-comatose condition. He received 120 units of insulin that day, which completely abolished the glycosuria and left only a trace of ketonuria. On the two following days he received 50 units a day, and on the second day hæmaturia was noticed. This lasted for 24 hours and re-appeared three days later for one day. Insulin (evidently) was given all along and was finally discontinued in two weeks' time.

Apart from the blood, the urine showed no abnormality at any time and kidney function tests were normal. There was no complication other than a well-compensated mitral lesion, due to previous rheumatism, and no history of previous hæmaturia, either in himself or his family. The pharyngitis was almost better when the blood first appeared.

The second case was that of a boy of eighteen, a severe diabetic, who was admitted with severe ketosis, which cleared up with large doses of insulin. Obvious hæmaturia appeared on the sixth day of insulin treatment (25 and 18 units morning and evening) clearing off within the day. As in the first case, the renal tests were normal and no septic focus was discovered nor any factor to account for the blood other than the insulin.

The authors can find reports of but seven other such cases. The only factor common to these seems to be that the hæmaturia appeared while large doses of insulin were being given.

It is pointed out, however, that more details are needed as regards the degree of ketonuria present, since it is known that ketone bodies are an irritant to the kidneys and the increased excretion caused by insulin might be responsible. In the two cases under consideration ketosis had been severe, but was practically absent at the time of the hæmaturia.

There seems to be no reason for thinking that the hæmaturia is any reason for discontinuing insulin, either temporarily or permanently.

H. E. MACDERMOT

Tod Infolge Bluttransfusion (Death Following Blood Transfusion) Biesenberger, H., *Wiener klin. Wchschr.*, 1928, xli, 923

The author states that the fatalities following blood transfusion, according to the reports given in the literature, were attributable to hæmolysis and agglutination. He reports a case in which neither occurred.

His patient was a female, aged 34 years, suffering from severe pernicious anæmia and a paralysis of the lower extremities due to myelitis. One hundred and fifty cubic centimetres of blood had been transfused, when the patient complained of sudden sharp stabbing pains over the heart. A preliminary pallor was quickly succeeded by severe cyanosis of the face, soon spreading over the whole body, together with a feeble pulse.

The transfusion was immediately discontinued, CO₂ was administered, as well as heart stimulants. In half an hour the patient had recovered sufficiently to be taken back to the ward. Then her condition again became serious, delirium set in, followed by coma. Death occurred in one hour from the beginning of symptoms, with all the signs of acute cardiac failure, including œdema of the lungs.

At the autopsy, in addition to the usual signs of pernicious anæmia and myelitis, an old stenosis and insufficiency of the mitral valve was found.

As a rule, the presence of an organic lesion of the heart is not regarded as a contra-indication to blood transfusion, but this case shows that there are exceptions. The severity of the heart lesion, the degree of compensation, and the accessory or accidental factors, in this case the pernicious anæmia, should be taken into account.

A. G. NICHOLLS

Shoe Dye Poisoning Aikman, J., *Am. J. Dis. Child.*, 1928, xxxv, 1038

This is a report of three cases of poisoning by shoe dye in children, who seem to have a susceptibility to its influence. The outstanding symptom in this type of poisoning is general cyanosis, which may be as extreme as it is in

cardiac disease. It is accompanied by general weakness, headache, vomiting, and general prostration, the symptoms beginning in from one-half to several hours after the shoes are put on. The condition lasts only a few hours, but deaths have been reported by some observers.

The poisoning is caused by the dye applied to tan shoes to alter their colour. Absorption of the dye takes place through the unbroken skin, and is more apt to occur if the shoes are damp. Removal of the shoes causes decrease of the cyanosis, but it may last several hours longer. There is some doubt regarding the poisonous element in the shoe dye, but it is generally held that it is either the aniline, or the nitrobenzene, which is the solvent used for the dye. Both these are benzene derivatives of the coal-tar series, aniline being reduced from nitrobenzene.

The packages in which the dye is put up contain a caution not to use dyed shoes until twenty-four hours after they have been finished. In one of Dr Aikman's cases, however, a boy of six years old, the shoes had been dyed four days before, and, though he improved after removal of the shoes, the cyanosis returned next day when the shoes were worn again. Another case is reported of a girl, aged nine, who showed a return of the poisoning when the shoes were worn nine days after the first attack.

The treatment consists of a thorough bath and a rest in bed. Dyed shoes should be well aired several days before being worn by children.

H. E. MACDERMOT

Gelatin in Medicine Beal, G. D., and Neff, A., *J. Am. Pharm. Ass.*, 1928, vol. xvii

The authors find that the first extensive use of gelatin was during the French Revolution, when the Government, backed by the Academy of Medicine, supplied gelatin soups to the poor. One manufacturer of gelatin named Gannal used his family for experimental feeding with gelatin, but after a time their health failed on their diet of gelatin and bread and water. It was Voit, however, in 1870, who first established the fact that gelatin always spares protein to some extent, but is less complete than protein.

Edible gelatin is prepared commercially by steam-cooking specially prepared bones or skin. The material is washed, then treated with lime for thirty days or more, re-washed, neutralized and heated in open vessels with steam coils. By this method the original protein, ossein or collagen, is broken down into gelatin. The solution is then concentrated, filtered and clarified.

Gelatin is used in medicine chiefly in connection with feeding. Its use in ice cream is practically universal, about 0.5 per cent is used to give the cream a smooth velvety texture. It lends itself also especially to making many attractive varieties of salads and desserts, which

is of considerable importance from the dietician's point of view

H. E. MacDERMOT

SURGERY

Benign Prostatic Hypertrophy Hunt, V. C., *Surg., Gynec. & Obst.*, 1928, *xlvi*, 769

The treatment of benign prostatic obstruction during recent years has led to the development of certain principles which have added to the reduction of the mortality rate and to the safety of surgical treatment and these principles have been combined by the internist urologist and the surgeon.

The stresses and strains of life result in degenerative changes in the cardiovascular system. In prostatic obstruction the renal excretory mechanism is directly affected resulting in renal insufficiency, but renal insufficiency may be otherwise organically impaired by other diseases of the cardiovascular system. Willius has concluded that the incidence of cardiovascular disease is higher with prostatic obstruction than with other diseases during the same decades indicating that cardiovascular disease is aggravated by persistent urinary retention.

Adenomatous hypertrophy comprises about 85 per cent of benign obstructing lesions the remainder being of an inflammatory nature. On rectal examination, prostatic fullness is encountered in 50 per cent of men fifty years of age but the symptoms of obstruction are relatively rare at that age or under. A small gland may produce obstruction with complete retention while on the other hand, a huge gland may provide adequate urethral passage. It is the moderate-sized gland which is usually productive of retention frequency and difficulty.

Cystoscopic examination is not recommended in all cases of prostatic obstruction. Braasch has followed the principle of cystoscopic examination in those cases in which observations on digital examination do not explain the symptoms. All cases should be given careful urological consideration for too often normal prostate glands have been removed for symptoms higher up in the tract. Retention and residual urine definitely due to the prostate, form the true indications for prostatectomy. The patient with prostatic obstruction is as a rule a poor subject for immediate operation, and the merits of preliminary treatment have been definitely established. Drainage of the bladder is of prime importance and cystostomy should give place to the permanent indwelling catheter, and should be continued until the cardiovascular-renal reserve has been restored to a period of safety. This period requires from ten to twelve days and is the method of choice, for it facilitates the one-stage visualized operation. Suprapubic drainage is necessary under the condi-

tions of associated vesical lesions such as stones and diverticula and in those cases of marked renal insufficiency requiring long periods of drainage. The intolerance of the indwelling catheter also is an indication, but this occurs only in about 6 per cent of the patients.

The two-stage suprapubic prostatectomy is the procedure of choice under certain circumstances but the one-stage visualized operation, preceded by catheter drainage is gradually becoming preferred and in the series studied was the method adopted in 72 per cent of the cases. Regional anaesthesia has properly displaced general anaesthesia in this field of surgery, and minimizes post-operative renal depression and pulmonary complications. The accepted contraindications to prostatectomy are, cardiac decompensation, coronary sclerosis with evidence of marked myocardial injury and advanced malignant hypertension. The results of prostatectomy are very gratifying about 85 per cent of the patients are completely, or almost completely relieved of their symptoms.

The author, in summing up, emphasizes the fact that the case of benign prostatic obstruction is largely medical; a surgical condition is present but there are aspects which may best be appreciated by the physician and it is through the combined effort of the internist urologist, and surgeon that the patient can be operated on with the minimal risk and assurance of the best functional result.

R. V. B. SHERR

The Diagnosis of Branchial Cyst Bailey, H., *Brit. M. J.*, 1928, *i*, 940

It is common to find a branchial cyst mistaken for necrotizing tuberculous cervical glands, for branchial fluid on being aspirated looks exactly like tuberculous pus and brings forth on bacteriological examination a report in keeping with that of tuberculosis namely "No tubercle bacilli found cultures sterile." In about 10 per cent of cases tubercle bacilli are found in tuberculous pus but the author quotes a case in which a branchial cyst was removed showing the characteristic stratified squamous epithelium upon a basis of lymphoid tissue while the fluid aspirated before operation showed numerous tubercle bacilli.

Caseating tuberculous glands are exceedingly common while branchial cyst is comparatively rare. Branchial cyst makes its first appearance in early adult life, curiously with an abrupt onset, after which the cyst slowly increases in size. Recurrent attacks of inflammation are usual. The cysts are nearly always related to the upper third of the sterno-mastoid around the anterior border of the muscle. But as the muscle becomes thinned and flattened over the cyst this relationship is seldom clear until the muscle has been rendered taut. To confirm the

diagnosis of branchial cyst a little of the fluid is aspirated, a drop of aspirated fluid placed on a slide, the slide examined with a one-sixth power lens, and the presence of cholesterol crystals at once makes the diagnosis certain

Branchial cysts should be completely removed by dissection. They often run deeply into the neck, and may extend upwards as far as the base of the skull. It is desirable to remove the cyst intact, for if the cyst bursts the dissection is difficult. The author believes that the following technique simplifies the operation after carefully cleaning the superficial aspect about half the contents of the cyst are removed by aspiration, the puncture hole being covered with a piece of gauze, the gauze and cyst wall are then picked up with a pair of sponge-holding forceps, gentle traction is made in various directions, and the cyst wall is cleared by gauze and blunt dissection, aided here and there by some sharp dissection. Using these means the intact cyst may be completely enucleated.

R. V. B. SHIER

GYNÆCOLOGY AND OBSTETRICS

An Analysis of Thirty-Two Cases of Ectopic Pregnancy and Three Suspected Ectopic Pregnancies Allen, E, *Am J Gynec & Obst*, 1928, xv, 540

Anything which interferes with descent of the ovum, whether it be infection or infantilism, predisposes both to sterility and ectopic pregnancy. In this study, the average age of the patients was 30.8 years, and the percentage of relatively sterile cases in the series was 71.7.

Irregular bleeding or spotting was the most constant symptom noted, but in one-third of the cases there was no period of amenorrhœa. As a rule the bleeding was not profuse and was often referred to by the patient as a normal period, until definite questions were put to her. Lacerating pain was not noted, but cramps in the lower abdomen, referred down the thigh, were present in 31 per cent. Seven-tenths of the cases showed a leucocytosis of 10-20,000, with a temperature range of 98° to 100° F.

Treatment consisted of a diagnostic curettage and colpotomy. If blood was obtained, and the tube was free, it was removed vaginally. The abdominal operation was advisable only when the pelvis was full of blood or the tube adherent. As a means of diagnosis in doubtful cases, the colpotomy incision was an invaluable aid.

ELEANOR PERCIVAL

Observations on Certain Features of the Pathology, Symptomatology, and Treatment of Retroversion Cooke, W. R. *Am J Gynec & Obst*, 1928, xv, 493

In a study of 1,153 cases of retroversion,

occurring in the gynæcological service of the John Sealy Hospital, several observations of interest were made.

Retroversion causes a congestion of both the uterine and ovarian veins, producing a large, boggy uterus, which microscopically shows perivascular fibrosis in the myometrium and hyperplasia of the endometrium. This stage is characterized by menorrhagia. In cases of long-standing retroversion the menstrual interval becomes irregular, due to fibrosis of the ovaries, the flow being therefore irregular and profuse. In very advanced cases, the ovary becomes so fibrotic, that amenorrhœa may occur. The individual symptomatology depends on the balance between the uterine and ovarian dysfunction.

As regards fertility, patients with menorrhagia showed a decreased fertility, but once the ovum became embedded, abortion seldom occurred. Those with delayed interval were less fertile and were more apt to abort, since the vitality of the ovum was low.

So far as treatment is concerned, simple measures, such as the knee-chest posture, a pessary, etc., are indicated in puerperal retroversions, and they may be used as a test to see if the symptoms are relieved, before resorting to operative procedures. When operation is necessary, the technique used is that of sewing the lower anterior surface of the uterus (well below the fundus) to the anterior parietal peritoneum by means of three sutures. At first, the uterus lies out of the pelvis, but within a few weeks it assumes an almost normal position.

ELEANOR PERCIVAL

The Influence of Disease of the Thyroid on Menstruation Hill, H. G., & Smith, J. F., *J Obst & Gynec Brit Emp*, 1928, xxxiv, 701

The relation between thyroid and ovarian activity has been recognized for some time. In some forms of thyroid disease menstruation is suppressed, while in others it is increased. In a study of 300 cases of thyroid dysfunction, in which basal metabolic rates were determined, the following conclusions were reached.

1. **Cretinism**—If untreated before puberty menstruation is usually established late. If properly treated the onset and type of menstruation are normal.

2. **Hyperthyroidism**—The periods tend to be scanty and irregular and, in very severe cases, may be suppressed.

3. **Hypothyroidism**—Here menorrhagia is the rule.

4. **Simple Adenoma**—If the basal metabolic rate is within normal variations, menstruation is not disturbed.

ELEANOR PERCIVAL

PÆDIATRICS

The Etiology of an Epidemic of Enteritis Associated with Mastoiditis in Infants Dick, G F, Dick G H, and Williams J L, *Am J Dis Child*, 1928, xxxv, 955

These authors report an outbreak of enteritis associated with mastoiditis in a foundling home. The epidemic is interesting because it was due to a primary intestinal infection with the Morgan dysentery bacillus, and was regularly complicated by otitis media and mastoiditis. In the more chronic cases, the subsidence of the acute intestinal inflammation and the progression of the mastoid lesions, which resulted in necrosis of the petrous portion of the temporal bone or sinus thrombosis and meningitis, obscured the intestinal origin of the disease.

"That this epidemic of enteritis associated with mastoiditis in infants was primarily an intestinal infection is shown by the results of bacteriological examination in which the Morgan dysentery bacillus was found, and by the fact that the epidemic was controlled through discarding all foods which were not fresh and which could not be boiled, and the adoption of measures to prevent the transfer of intestinal bacteria by the fingers of nurses."

R. R. STRUTHERS

The Sex Factor in Infantile Tetany, Bakwin, H, and Bakwin, R M, *Am J Dis Child*, 1928, xxxv, 964

This paper reviews the sex incidence of tetany in 136 cases at the Bellevue and Babies' Hospital, New York. Of these 68 per cent were boys and 32 per cent girls. Apparently, infantile tetany is twice as common in boys as in girls. This indicates a predisposition on the part of males for tetany comparable to that of females for chorea. This predisposition is even more marked below the age of 8 months. The increased severity of the disease in males is striking. All the deaths in the series reported occurred in male infants.

R. R. STRUTHERS

PATHOLOGY

Pulmonary Asbestosis in South Africa, Simson F W, *Brit M J*, 1928, i, 885

It has been known for some time that workers exposed to the dusty atmosphere attendant on the preparation of asbestos materials suffer pulmonary disabilities, but very little has as yet been written concerning the pathological changes in lungs caused by the asbestos itself.

Dr Simson now publishes details of four patients in whom certain special pulmonary changes were noted in conjunction with their having been employed in asbestos mines in

Southern Rhodesia. In two of these there were connective-tissue changes which were different from those found in tuberculous conditions, and were also in contrast to the sharp definition of silicotic nodules, but the most striking feature common to all four was the occurrence of numerous golden yellow bodies which were found either embedded in the fibrous tissues, lying free in the alveoli, or contained in phagocytic cells. They varied in shape, but usually had rounded or club-like ends, with a segmented body tapering to a finely pointed tail. They were non-refractile to polarized light, soluble in strong acids, and on being heated turned black and tended to lose their outline. They gave a well marked Prussian blue reaction with hot diluted hydrochloric acid and potassium ferrocyanide. These and other tests led to the conclusion that the bodies contained a large percentage of iron.

Comparison was made with sections of lungs from a large number of miners on the Rand who had died from silicosis and tuberculosis, but none of these could there be found any such bodies as those described. Confirmatory evidence of their connection with asbestos dust was obtained from the lungs of a guinea pig which had been exposed to the dust under experimental conditions, the presence of the golden yellow bodies was easily demonstrated in the animal.

These bodies therefore seem to be undoubtedly associated with asbestos, not as it is mined in open quarries but in the mills where waste rock is crushed for extraction, and where the asbestos undergoes carding and spinning.

As regards the association of asbestosis with other pulmonary diseases, evidence is being accumulated to show that phthisis occurs with sufficient frequency among asbestos workers to warrant the suggestion that this occupation serves as a predisposing factor to a certain extent.

H. E. MACDEPOT

Blood Vessels in the Valves of Normal Hearts Ritter, S A, Gross, L, and Kugel, M A, *Am Heart J*, 1928, iii, 433

These workers have studied 700 hearts by the injection method to determine the existence or otherwise of blood vessels in the valves. In this series there were 14 cases in which both the study of the gross and microscopic appearances, and the clinical history of the patient, showed the heart to be apparently perfectly normal, and yet to present blood vessels in some of the valves. This fact and other reasons given make it highly improbable that the vascularization of the valves in these 14 normal hearts owes its origin to inflammation, or that the vessels are other than embryonic vestiges.

M. E. ABBOTT

THERAPEUTICS

The Treatment of Malignant Disease by Colloidal Lead Wyard, S, *Brit M J*, 1928, 1, 838

Dr Wyard felt that the success claimed for the treatment of malignant disease by injections of colloidal lead warranted a careful investigation of the method, and he now presents a report of his work on the subject. Working in association with Dr Lorna King, he treated a series of 88 patients by this method, but, in order to compare his results with those of Dr Blair Bell, he omits details of 32 of these cases, in whom he used a preparation of colloidal lead hydroxide which differed slightly (although, as he thought, advantageously) from that used by Dr Bell. Little importance is attached to the statement that satisfactory results could only be obtained by preparing the lead in a particular manner, since the method of preparation was apparently changed several times in Liverpool.

Fifty-six cases were treated strictly by the Liverpool method. It was impossible to obtain supplies of the colloidal lead, and Dr Wyard therefore prepared his own by means of a special electrical apparatus. He lays emphasis on the fact that even with the greatest care and attention to details the preparation is very unstable and cannot be prepared in bulk for use at a later date.

Most types of malignant disease were treated, epithelioma, carcinoma, and sarcoma. In every case the disease was at an inoperable stage, or was recurrent after operation. It was not easy to obtain patients who fulfilled the conditions necessary for an investigation of this type, since they were either receiving radiation, or some other form of treatment which would vitiate conclusions as to the lead treatment, or else they

were too far gone for any form of treatment.

Some difficulty was experienced in establishing the dosage and the interval between treatments. Very severe reactions were found to follow what seemed safe quantities. The interval could only be decided by clinical experience. No reaction in the growth itself could be detected with certainty, except that in two cases the mass presented pain and swelling.

The paper goes into the various changes produced by the lead, in great detail, and should be consulted for such.

Autopsies were made in 17 of the cases, with remarkably constant findings. In no case was there any sign of retrogression of the growth, in every case the mass was larger than at the beginning of the treatment. In nearly every instance the brain showed a marked degree of superficial oedema, the liver, extreme fatty degeneration, and the kidneys some degree of desquamation of the convoluted tubules. Dr Wyard feels justified in ascribing these constant changes to the toxic action of the lead.

His final conclusion is that there is no support for the statement that colloidal lead exerts any beneficial influence on the progress of a malignant growth. Of the 56 patients treated, only one showed definite improvement, and in this there was some doubt regarding the malignancy of the gland involved (a small supraclavicular node following amputation of the breast one year previously). On the other hand, of 40 patients who received enough treatment to warrant the expectation of some benefit ("if any ever occurs"), 22 died, 11 were clearly worse, 6 showed no change either way, and only one improved.

In addition to this he points out that the method is difficult and dangerous.

H. E. MACDERMOT

To Promote Sleep—The Institution of Civil Engineers held a *conversazione* at the Institution, Great George Street, Westminster. An exhibit which excited much interest was the Yarrow Hyde bed. This was shown by Sir Alfred F. Yarrow, for whom it was constructed in order to promote sleep. It was explained that during a journey last autumn from Vancouver to Montreal he found that when the train was in motion he slept far better than when it was still. He tried experiments similar to those which he made many years ago on the vibration of ships, and he determined

to repeat, if possible, in an ordinary bed, the vertical movements of a train. He asked the National Physical Laboratory to study the subject. Mr Hyde, one of the engineering staff, provided a solution of the problem, and the result is the Yarrow Hyde bed, which, it is stated, has a movement that corresponds so far as practicable in amplitude and frequency to what was found in the train on the Canadian Pacific Railway. A simple crank mechanism worked by an electric motor provides a gentle rise and fall of the bed at its head.

Obituaries

Dr Charles Magee Anderson, of Toronto, Director of Laboratories, Ontario Department of Health, died suddenly on July 19th in his 38th year, at the home of his father in law, George E. Firth of Burrill's Rapids on the Rideau River. He was a native of Ottawa, the son of the late William and Mrs. Anderson. He received his education at the public schools and Ashbury College, at McGill he received the degree of M.D., C.M., and at Johns Hopkins University he obtained the diploma of D.P.H. He served overseas in the Imperial Forces with the Royal Sussex Regiment as medical officer during the Great War. For eight years he had been in his provincial position at Toronto and was widely known in Ontario in connection with his public health work.

Dr J. N. H. Campeau. It is with regret we announce the death of Dr J. N. H. Campeau, which occurred at his residence, 3672 Lasalle Boulevard, Verdun, on July 11, 1928. Dr Campeau was born at Rigaud on July 17, 1868, was educated at Rigaud, and graduated in medicine from Laval University in 1889.

Dr Peter Anderson Dewar died on April 7, 1928, at his residence in Walkerville, Ont. He was born on a farm in Lambton County on September 4, 1859, and received his early education in the public schools of that county and in the Sarnia Model School. His first profession was that of teaching, and from that he stepped into medicine, graduating from Trinity Medical School in Toronto in 1885, with first class honours. He began practice in Essex, Ont., and remained there for eleven years, during which time he built up a very extensive clientele, and also took an intense interest in the civic affairs of the town. In 1896 Dr Dewar moved to Windsor, where he practised until a few months before his death, when ill health compelled him to moderate his activities.

During his professional career he started a number of young graduates on the road to success. His favourite maxim to them was "Be well known as a physician," and he himself always kept this ideal in mind and lived up to it fully, with the result that he was widely known as one of the most brilliant and successful physicians of western Ontario.

Two years ago he was given a dinner and a presentation which testified to the high regard in which he was held by his fellow practitioners, as well as by the community in general. This marked the completion of forty years active practice in Essex County, and was attended by about one hundred representative citizens of the border cities.

He is survived by his wife, (née Annie K. Nesbit) and five daughters.

Dr Andrew Love, who died at New Glasgow on June 16th, was one of the best known practitioners in Nova Scotia. He graduated at McGill in 1891, and after a year or two at country practice located at Sydney Mines. Here he quickly developed a large practice and identified himself prominently with community affairs. On the outbreak of war he volunteered for overseas service, and was soon sent to France, where he was engaged until hostilities ceased.

On returning home, he located at New Glasgow, and was soon well established there. For two years or more he had been in indifferent health, possibly as a result of war service, but the illness which resulted in his death was of only a few days' duration.

Dr Love was very popular, served in the Town Council of New Glasgow, was Commissioner for Pictou

County of the Boy Scouts Association, and on one occasion accepted a nomination to contest Pictou County in the interests of the Conservative party, although he resigned before the election came on. He enjoyed an enviable reputation as a practitioner, and was highly esteemed by all classes and creeds.

Dr Daniel Angus McAulay, of Baddeck, died recently under unusually sad circumstances. Dr McAulay, who was one of the younger members of the profession, graduated from Dalhousie in 1910. He was one of those who responded early to his country's call, and served under the colours almost throughout the war with credit. He settled in Baddeck soon after his release from military duty, and quickly won a place in the esteem and affection of that charming village. A few days before his death, while operating on a septic case, he became infected and it soon became evident that his condition was very serious. He was removed to hospital at North Sydney, where every effort was made on his behalf, but death occurred on June 16th.

Hon. Dr L. P. Normand, ex-mayor of Three Rivers and Minister in the Meighen cabinet of 1921, died at his residence, Three Rivers, on June 27th, after a short illness.

Hon. Louis Philippe Normand, M.D., was a prominent physician and had been head of the Medical Council of Canada. Born at Three Rivers, Que., on September 21, 1863, the son of Telesphore E. Normand and Alphonsine Giroud, he was educated at LaSalle Academy, St. Joseph Seminary and Laval University, graduating as M.D. from the latter in 1886. Later he pursued his medical studies in the United States, Great Britain, France and Italy.

Dr Normand always took a keen interest in municipal affairs, and was mayor of the city of Three Rivers for four consecutive terms. When Right Hon. Arthur Meighen reorganized his cabinet before the general election of 1921 Dr Normand was sworn in as President of the Privy Council. He contested Three Rivers-St. Maurice in the Conservative interest, but was defeated and went out of office with the resignation of the Government in December, 1921.

On February 5, 1891, Dr Normand married Mlle. Graziella H. Beaulieu, daughter of Charles Beaulieu, of Sorel, Que. The children are Philip, a priest, Hortense, Louis P., Jeanne (married to Georges A. Goun), Joseph, Margaret, Jean and Pierre.

Dr Normand enjoyed extraordinary popularity in his district. His professional attainments were of a high order and had been widely recognized by medical associations and institutions, not only upon this continent but in Europe.

DR NORMAND AN APPRECIATION

With the death of Dr L. P. Normand, of Three Rivers, which happened the last days of June, we have to bewail the loss of a leading figure in our Canadian profession. Dr Normand was not only a brilliant surgeon in his native Province of Quebec, but a leading figure in our profession far and wide in Canada.

Born in 1863, he graduated after eight years of classical studies at Laval University, well prepared for the high positions he was later to occupy. We all know the importance attached in England and Scotland, as well as on the continent, to a good basis for future medical studies and the high opinion in which classical studies are held as a solid *groundwork* for further studies. He graduated B.A. with honours, and later completed his medical studies in New York and Paris, as well as London.

He settled down in Three Rivers, the centre of a most active industrial area, that of the St Maurice River, a thriving little city of over 30,000 souls to day. His fame as an able and conscientious surgeon grew rapidly and people flocked to him from all over the vicinity as well as from far away.

President of the local medical society and President of the Second Congress of French speaking Physicians of America, still higher honours awaited him. Soon he was elected President of the Province of Quebec College of Physicians and Surgeons, and later was called to the high position of President of the Medical Council of Canada.

Always of broad ideas, of a congenial mind, well read, well travelled and well trained in his profession, he had a host of friends far and near.

After the conflagration which swept his native town, he was called to the leadership of the City Council and through his energy and enterprising spirit recreated a new city, which all motorists from Montreal to Quebec admire. He even entered the political field and was Minister in the Meighen Cabinet.

Honours came to him plentifully, and particularly

did he prize his elevation as Knight Commander of the Order of Gregory the Great by the Pope for services to the community, and Officer of the Legion of Honour by France for his devotion to the cause of education, public as well as medical.

The disappearance of such men is a loss not only to their own community but also to our profession.

He laboured well and deserved well.

EUG ST JACQUES

Dr E Virolle The death occurred suddenly, on July 4th, at his residence, 116 Laprairie Street, of Dr Eugene Virolle, well known teacher at the University of Montreal, aged 54 years. He was born in 1874 in Montreal, and was prominent in medical circles. At the time of his death he was Professor of Anatomy at the University of Montreal.

Dr John Percy Waddy died in Toronto on June 25th in his 79th year. Dr Waddy was born in Ireland and received his education there, coming to Canada forty years ago. After many years' practice in Muskoka Dr Waddy moved to Mount Albert, and, later retired to Toronto where he had lived up to the time of his death.

News Items

GREAT BRITAIN

The Leishman Memorial

On June 2nd, two years after his death, a memorial tablet to Lieut General Sir William Leishman, KCB, FRCS, was unveiled in the chapel of the Queen Alexandra Military Hospital, Millbank, and following the ceremony another tablet was unveiled in the pathological laboratory of the Royal Army Medical College. A brief dedicatory service was conducted by the Chaplain General of the forces. These tablets form part of the memorial subscribed for by the officers, non-commissioned officers and men of the Royal Army Medical Corps. The main portion consisted in the medal which had been struck and the prizes offered for competition to officers and men of the corps. It was stated at the unveiling that, while the memorial in the chapel was intended to commemorate Sir William Leishman as a great Director General, the memorial in the laboratory recalled him as a teacher, an eminent man of science, a research worker, and a discoverer of world-wide renown. Although the memorial had been erected at Millbank, it was only right to say that much of Leishman's work was carried out elsewhere. The original discovery of the parasite of kala-azar was made in the old laboratories of the Army Medical School at Netley, there also Leishman prepared the stain which bore his name, and it was there he was associated with Almroth Wright and David Semple in work on the typhoid vaccine—work which was subsequently to develop to such a remarkable extent in the army, to be the means of saving thousands of lives of British soldiers in India and elsewhere, and to be adopted and adapted by practically every nation in the world. As professor of pathology Leishman put in very strenuous work.

General Harvey described his teaching carried on in that very room, and his gradual attainment to the position of a national figure in the field of research, so that there was hardly a piece of organized medical research with which he was not connected, but he added that Leishman was not a scientist so absorbed in his pursuit as to be oblivious of the claims of family and friends. He was a devoted husband and father, and nothing would have pleased him more than the high degrees in science recently obtained by two of his daughters and the academic career of his son. "Tablets

will crumble in the course of time, but the name and fame of William Leishman will be passed on," said General Harvey in conclusion, "from generation to generation." The tablet in the college records the fact that Leishman carried out his researches on typhoid, kala-azar, relapsing fever, and other diseases in that place, where he taught from 1907 to 1913. The tablet in the chapel recites his many military, medical, and academic distinctions. The ceremonies were attended by Lady Leishman and other members of the family, and by a large number of past and serving officers, while among others present were Sir John Rose Bradford (President of the Royal College of Physicians), Dr Andrew Balfour, Sir Almroth Wright, Sir David Semple, and many more who came into close touch with Sir William Leishman's life and work.

A Relic of David Livingstone

At a meeting of the Royal Faculty of Physicians and Surgeons of Glasgow on February 6th, Mr G H Edington, the president, in the chair, the surgical pocket case used by David Livingstone during his daily work in Africa was presented to the Faculty by Dr Freeland Fergus, on behalf of Mr Hilliard, surgical instrument maker in Glasgow, to whom the relic belonged, but who was prevented by his state of health from attending the meeting. In the course of a letter from Mr Hilliard it was recalled that Dr Livingstone had been born at Blantyre, some seven or eight miles distant from the hall of the Faculty, and had obtained his licence to practise from the Faculty of Physicians and Surgeons at Glasgow. Through Mr Hilliard's influence, the instrument case which belonged to Dr Beatty, R.N., the surgeon on board the *Victory* at the battle of Trafalgar, had been, some years ago, presented to the Royal Faculty of Physicians and Surgeons. Dr Fergus mentioned that Mr Hilliard had been the close friend of Dr Livingstone's son, Mr W Osell Livingstone, from the old High Street College days. In 1909 Mr Hilliard had followed the steps of the explorer in many districts, including the flourishing town of Livingstone and other places bordering on the Zambesi. Many offers had been received for the relic from wealthy collectors in America, London, and Scotland. Dr Fergus added that

although Mr Hilliard was not a member of the medical profession, he had been connected with it all his life, being born in the Royal Infirmary, where his father, as cutler and instrument maker, had at that time an official residence

Sir Ronald Ross as a Pupil

Sir Ronald Ross has been the recipient, at the hands of Lord Leverhulme, of the Harben Gold Medal of the Royal Institute of Public Health. This medal, which has been won by such famous men as Pasteur and Lister, is awarded every three years for "eminent services to public health, irrespective of nationality." Sir William Smith, principal of the Royal Institute of Public Health, recalled during the simple ceremony that Sir Ronald Ross was one of his pupils. "He was one of the most

difficult men with whom I have had to deal," he said. "In fact, I thought he would never pass the examination for public health. Now he has long left his teacher behind."

The Dawson Williams Memorial Fund

The Committee having in charge the duty of arranging for some suitable memorial to the late Sir Dawson Williams, Editor of the *British Medical Journal*, report that a sum somewhat in excess of £500 has been collected. Trustees have been appointed who have suitably invested this sum. It has been recommended that the memorial take the form of a Prize, to be awarded every two years, or at longer intervals, for the best work on Pædiatrics which has appeared since the last award.

NOVA SCOTIA

The graduating exercises of the training school of Kings Memorial Hospital, Berwick, were held in June. The principal speaker was Dr H. K. MacDonald, of Halifax, whose address to the graduating class was replete with sound advice.

On June 12th, eleven nurses graduated from St Joseph's Hospital, Glace Bay.

It has been decided to rebuild the Amherst Hospital, the destruction of which by fire was mentioned last month, on the site of the old building. It has been found that the old walls can be utilized to a considerable extent. Several architects are interested in the preparation of plans for the new building.

It will be remembered that the nursing staff had no opportunity of saving any of their effects on account of the necessity of removing the patients. The citizens of Amherst raised a subscription and each nurse has been presented with a cheque for one hundred dollars towards reimbursing her loss. Investigation by the fire marshall led him to the opinion that the fire was due to defective electric wiring.

At the annual meeting of the Registered Nurses Association of Nova Scotia, held in Yarmouth in June, Miss Catherine M. Graham, of Halifax, was elected to the presidency.

The Massachusetts Halifax Health Commission ceased its activities at the end of May. It is understood that the Victorian Order of Nurses will take over some clinics which were conducted by the Commission in the north end of the city. The public health nursing service maintained by the Commission is not likely to be continued.

Dr T. M. Siemewicz, who has been Acting Executive Officer for the Massachusetts Halifax Health Commission during the past few years, accompanied by Mrs Siemewicz, will spend the next three months in Europe, where the doctor will visit many of the more important tuberculosis clinics and make a special study of the various phases of anti-tuberculosis work.

Dr John Stewart, Dean of the Faculty of Medicine of Dalhousie University, who commanded the Dalhousie Unit during the war, celebrated his eightieth birthday on July 3rd. A host of friends called upon the Dean to wish him many happy returns of the day, and he was the recipient of many congratulatory letters and telegrams from distinguished colleagues in various parts of the world.

It was a source of much delight to the medical profession of Nova Scotia that the annual meeting of the Canadian Medical Association, at Charlottetown, should have been so successful. Bluenose physicians generally extend hearty congratulations to their colleagues of the tight little Island upon having earned through a very ambitious undertaking with such conspicuous success.

The Sutherland Memorial Hospital which replaces the Pictou Memorial Hospital was opened with appropriate ceremonies on June 27th. His Honour, the Lieutenant Governor was present and made a congratulatory address. Dr John Stewart of Halifax, whose earlier years of practice were spent in Pictou, unlocked the doors and declared the hospital open to the public. Among others who spoke was Dr Kenneth A. MacKenzie of Halifax, who claimed Pictou as his birthplace. The hospital is an attractively designed, well planned brick building, and occupies a beautiful site which commands a broad view of Pictou harbour and surrounding country. A very generous contributor to the new hospital is Mr Daniel Sutherland, a highly respected and much beloved citizen of Pictou.

The Refresher Course for Nurses, arranged last year by Dalhousie University, proved so successful that a very general desire was expressed that it should be made an annual event. This year the course was held during the latter part of June, and attracted a large attendance of nurses from each of the Maritime Provinces. Contributing to the program were a number who do not belong to the Dalhousie staff, notably Miss Beard, director of the nursing activities of the Rockefeller Foundation, who gave greatly enjoyed addresses on three days, and otherwise took an active part in the proceedings.

In connection with the summer school now being conducted by the Department of Education, more attention is being given than formerly to the teaching of Public Health. Drs Jost and Chisholm, of the Provincial Department of Health, and Dr C. S. Marshall, Provincial Psychiatrist, are giving instruction which is intended to impress the teachers with the importance of public health work, and to point out to them the opportunity they have of instilling the principles of personal hygiene in the minds of school children.

Word has been received that Mr Harry S. Morton, the son of Dr Charles S. Morton, of Halifax, has passed the second examination for the medical degree of the University of London, and has also passed the primary

Fellowship examination of the Royal College of Surgeons, London

Dr Lewis Hunt, a native of Nova Scotia, who has spent the greater part of his professional career in England, died recently at his home in Richmond. For several years, Dr Hunt was mayor of Richmond. Last

summer he spent several months in Nova Scotia, looking up old friends

Dr D J Hartigan, of New Waterford, has ventured into a field which is rather new for physicians. He and his brother have purchased a coal mining property, with the intention of developing it. W H HATTIE

QUEBEC

Infantile mortality continues to take its toll, though the figures are improving. Returns for last December give an infantile mortality rate for the Dominion of 85 per 1,000 living births, as against 100 per 1,000 in the December previous. Quebec, among the provinces, had the highest infantile mortality rate for last December, namely 112.4 per 1,000, Ontario the lowest, with 65.6. Quebec's rate shows a big improvement, as against 125 in December, 1926. Alberta shows the biggest relative improvement. In December, 1926, the Alberta rate was 113.2, last December it was 68.8.

Following an address on health by Dr A. Lessard, Director of the Provincial Bureau of Health, the county council of Chambly decided to apply for a health unit with a clinic. These health units are established by the provincial authorities, and at the meeting at Longueuil lately it was decided to apply to the Rockefeller Institute for additional assistance. Part of the expense is paid by the county and part by the province, and the county chooses the doctor. This doctor passes his certificate test, and is then eligible for the position of caring for the clinic or health unit. He cannot then be discharged except with the approval of the government. Not only physicians, but nurses are planned for Chambly County. They will instruct the women in their community in the care of infants. The probable centre for the health clinic will be Longueuil. The council plans also the introduction of serums for certain diseases.

In connection with the appointment of the new head of the Provincial Police, it is believed that Dr Wilfrid Derome, medico-legal expert, will be given a new post, that of technical advisor to the Provincial Police and director of scientific research. Dr Balthazard, in Paris, Dr Reiss, in Geneva, and another medico-legal expert in Lyons, are filling such positions, and it is said that a police department which has once had the many advantages of a scientific director should not be without such an officer.

Dr J. E. Belanger, President of the College of Surgeons of the Province of Quebec, has been appointed medical officer of the new Workmen's Compensation Board, which will commence its duties on September 1st.

The construction of an annex to the Civic Hospital of Quebec will in all probability be deferred until next year, as the amount which was tentatively suggested, \$40,000, is insufficient to build anything which will be practical. It is likely that the Civic Hospital item will be dropped from the forthcoming referendum and will be put on the list for next year, in a revised form. The ratepayers will be asked to vote on a larger amount, which will include both the cost of construction and furnishing the annex.

Since the navigation season opened nearly thirty cases have been treated at the Immigration Hospital in Savard Park, Quebec, for scarlatina, measles, diphtheria, and fractures. A new wing is to be added to the present hospital, which will give an additional 180 beds, and at the same time provide quarters for

clinics, sterilization, and x-ray. Tenders are to be called for the construction of the annex, which is expected to cost \$75,000. Work will be pushed in order to have the wing completed for the autumn.

The City of Montreal provided two thirds of the people on whom inquests were held in the Province of Quebec during 1927, according to official statistics. Among these, French Canadians outnumbered all others by 20 per cent. In all, there were 3,227 persons upon whom inquests were held during the year, and their numbers, by nationalities, were as follows: French Canadians 2,329, Canadians of British origin 424, Scotch 68, Irish 125, others 136, Italians 25, Russians 12, Greeks 5, Americans from the United States 13, other nationalities 90. Montreal provided 1,252 French Canadians, 389 English Canadians, 64 Scotch Canadians, 87 Irish Canadians, and 130 other Canadians of British origin. In addition, inquests were conducted in the city of Montreal over 34 Italians, 11 Russians, 3 Greeks, 10 Americans, and 66 other nationalities for a total of 2,066, out of a provincial total of 3,227. Three judicial districts did not hold a single inquest during the year, these being Hull, Richelieu and St. Francis, the latter in the Sherbrooke district.

Montreal's first Anti-diphtheria Week will be ushered in this month. This is being instituted by the Child Welfare Association in order to immunize the 90,000 children of the city, between the ages of one and ten years, against the disease. Dr A. B. Chandler, Medical Director of the Child Welfare Association, stated that four clinics would be operated by the association in different parts of the city. Three inoculations will be given the patients at intervals of two weeks. Each clinic will be operated by two doctors, five nurses, and five voluntary workers. A charge of 50 cents will be made for each child for the full course of three inoculations, the money to go towards the cost of material. The Medical Director remarked that, in view of the saving of \$100,000 to the city in grants that they have made in previous years to the various hospitals for diphtheria purposes, it would be appropriate for the city to pay the 50 cents required from each child for the inoculations.

In a lengthy report on American museums by Dr E. E. Lowe, Director of City Museums and Libraries of Leicester, published recently by the Carnegie United Kingdom Trustees, tribute was paid to the exhibits in the museum at McGill University and the methods of preparation of these exhibits. Special reference was made to the Strathecona Museum in the medical building, which is being rearranged under the direction of E. L. Judah, Curator. It is expected that this will be opened to the public early this autumn. Dr Lowe said in part: "The McGill University of Montreal contains fine medical and other museums which are in the process of steady development, but are at present largely directed towards purely university teaching." In another part of the report, reference was made to the beautiful skeletal preparations, which Dr Lowe said were excellent, due to a large extent to the care taken by the curator.

GEORGE HALL

ONTARIO

At the June examinations for admission to the College of Physicians and Surgeons of Ontario, there wrote successfully 42 from the University of Toronto, 6 from the University of Western Ontario, and 2 from McGill. The actual number of applicants who were writing is not given.

The following details of the final examination at the University of Toronto Faculty of Medicine are given by the secretary of the Medical Faculty —

Number of students in final year who graduated, 100, number who graduated with Honours, 3, number who passed with Honours, 9, Faculty Gold Medal, B Willmsky, D.D.S., First Silver Medal, J W Shier, B.A., Second Silver Medal, E F Brooks, J J Mackenzie Prize in Pathology, B Willmsky, D.D.S., The Chappell Prize in Clinical Medicine, E F Brooks, George Armstrong Peters Prize in Surgery, B Willmsky, D.D.S., Starr Silver Medal, F N Allan, M.D., *cum laude*, The Ellen Mickle Fellowship, B Willmsky, D.D.S., The Charles Mickle Fellowship, Sir Henry Head, F.R.S., M.A., M.D. (Cantab.), M.R.C.P., Lond., M.R.C.S., Eng., F.R.C.P., LL.D., Edin.

The Secretary of the Medical Faculty of Queen's University makes the following announcements in connection with the final year in medicine. The degree of M.D., C.M., was conferred upon 57 gentlemen. No less than 50 obtained hospital appointments in various institutions of Canada and United States. The prizes and awards were as follows —

The David Edward Mundell Scholarship of \$50.00, awarded to the student making the highest aggregate marks in the Surgical Applied Anatomy final examinations of the fifth and sixth years, A. B. Susman, B.A., Kingston, Ont.

Canadian National Committee for Mental Hygiene Scholarship of \$50.00, awarded to the student making the highest number of marks in Psychiatry, G. C. Ferguson, B.A., Bishop's Mills, Ont.

A Prize of \$20.00 in gold, given by Dr James of Mattawa, for the best examination in final year Medicine and Clinical Medicine, Honour to G. C. Ferguson, B.A., Bishop's Mills, Ont., Award to H. W. Justus, Winchester, Ont.

A Prize for the best series of pathological cases, given by Dr James Miller, R. K. Start, Toronto, Ont.

Professor's Prize in Medicine and Clinical Medicine, L. B. Carruthers, B.A., Sarnia, Ont.

Professor's Prize in Surgery and Clinical Surgery, H. W. Justus, Winchester, Ont.

Dr D. T. Smith's Prize in Pharmacology, J. A. Kearns, Quyon, Que.

Medal in Medicine, G. C. Ferguson, B.A., Bishop's Mills, Ont. Medal in Surgery, L. B. Carruthers, B.A., Sarnia, Ont.

N. B. GWY

An anonymous benefactor has undertaken to contribute \$50,000 towards the establishment of a Chair of Preventive Medicine in Queen's University, Kingston, in honour of Dr Arthur Elhott, an alumnus who formerly practised in Belleville.

In considering this gift, the authorities of Queen's hope to obtain annual support from the Ontario Government and other interested bodies which will permit the erection of a building costing in the neighbourhood of \$200,000. This Public Health Building will be a part of the Faculty of Medicine, and the hope is entertained that the Provincial Government will make it the centre for the health activities of the eastern counties of the province.

MANITOBA

Hon. Dr E. W. Montgomery, accompanied by Mr Isaac Pitblado, K.C., Dr M. S. Fraser, and Sergt Rose, R.C.M.P., has returned to Winnipeg after journeying more than six hundred miles in northern Manitoba, chiefly by canoe. The party left The Pas June 10th, and returned to that point on June 28th. The trip took them successively to Reed Lake, Elbow Lake, Cranberry Lake, Lake Athapapaskow, Flin Flon, and Mandu Mines, and back via Cold Lake and Sherritt Gordon mines, up Cold River to Flatrock Lake, down to Brentwood Lake, Nelson House and out to Mile 185. The party then went to the end of steel at mile 356, and being advised that ice conditions did not permit sailing vessels to approach Fort Churchill, to which point it had been their intention to go, they returned southward.

Dr Montgomery reports health conditions among the Indians, miners, prospectors and railway workers to be satisfactory.

A successful meeting of the Brandon and District Medical Society was held at Souris on June 29th. The following program was presented: Dr H. O. MacDiarmid (Brandon), "Acute mastoiditis and its complications", Dr Bruce Chown (Winnipeg), "Pneumonias of infancy and childhood", Dr E. J. Boardman (Winnipeg), "Hypertrophy of the prostate".

The biennial meeting of the Canadian Nurses Association was held at the Fort Garry Hotel July 3rd to 7th, under the presidency of Miss Mabel F. Gray, head of the Department of Nursing, University of British

Columbia. At the evening session of July 3rd, addresses of welcome were given by Miss A. E. Wells, representing the Manitoba Association of Graduate Nurses, Mayor MacLenn, Hon. Dr E. W. Montgomery, Dr H. M. Speechly, representing the Manitoba Medical Association, and to these Miss Gray, the acting president, made reply. Prof. R. C. Wallace gave an address on the work of the public health nurse, particularly in outlying districts. The question of affiliation of the Canadian Nurses Association with the Canadian Medical Association was under discussion, as was also the national enrolment of Canadian nurses for emergency service in times of disaster, war, etc. At the evening session of July 5th, addresses were given by Hon. R. A. Hoer, Minister of Education for Manitoba, by Miss Ruth Hallows, Educational Director, College of Nursing, London, Eng., on "Tradition in English Nursing," and by Dr A. T. Mathers on "Mental Hygiene and the Nurse".

The new ten bed hospital at Mile 327 on the Hudson Bay railway is now complete in every detail and patients have been received and cared for in it for the past week. This is a modern steamheated structure, built in bungalow style with a full basement, running water, and electric lights. Dr L. R. Shier is the physician in charge, under Drs Orok and Stephansson of The Pas, the C.N.R. surgeons, and Miss E. K. Cotter is the attending nurse. During the past two years, the hospital at Mile 327 has been housed in cars which have lately been removed to Mile 214, with Dr R. E. Holbrook in

charge Twelve bed tents with wooden floors and walls house the hospital at the Silkox River, Mile 394 Drs C B Stewart and A. Ferguson are in charge here Drs Orok and Stephansson also have a gas-car patrol carrying a physician up and down the line once a week, and Dr Shier at Mile 327 has a gas car at his disposal

The report of the city of Winnipeg Health Department for the year ending December 31, 1927, is now available The number of deaths, excluding stillbirths, was 1,650 Assuming the population to be 198,932, this gives a gross death rate of 8.29, the lowest death rate for this city on record The number of deaths in children under one year of age was 273, giving a mortality rate of 61.17 per 1,000 living births, which again is a new low rate When infant welfare was embarked on as part of the civic program the rate was 207 Dr A. J. Douglas, Medical Health Officer, feels that it is possible to get the rate of 61.17 still lower, by continuing the work and broadening the education of the public as to its possibilities

The number of births, excluding stillbirths, was 4,463, giving a birth rate of 22.44 per 1,000 population Stillbirths numbered 200 Of the 273 infants who died during the year 1927, or 38.8 per cent, died within the first week of life While infant mortality rates were ranging between 100 and 200 per 1,000 live births, still births were of lesser importance, but now that the infant mortality rate is about 60 and the stillbirth rate is 45, the latter assumes a new prominence, especially when it is considered that out of the 273 infant deaths, 64 occurred within 24 hours after birth and that out of the 200 stillbirths registered in 1927 a large proportion occurred within 24 hours before birth

Births in hospitals and nursing homes during 1927 were 73 per cent of the total In 1912 the percentage was 31.5 Physicians were in attendance in 95.7 per cent of cases and midwives in 43 per cent In 1920

the figures were respectively 89.0 per cent and 11.0 per cent

There were 25 puerperal deaths, giving a puerperal mortality rate of 5.6 per 1,000 live births The rate for residents was 4.5, and for non resident women, who were confined in Winnipeg, the rate was 8.6

Of communicable diseases there were 27 cases of typhoid with 6 deaths, 48 cases of smallpox with no deaths, 542 cases of diphtheria with 34 deaths, 885 cases of scarlet fever with 6 deaths, and 221 cases of tuberculosis of the lungs with 74 deaths Of the small pox cases developing within the city all cases were unvaccinated, save two contacts whose vaccinations were performed some days after exposure Dr Douglas points out that the number of unvaccinated people in the city is too high Diphtheria in 1927 showed increased virulence, with 34 deaths, as against 20 in 1926 A group of cases occurred in which the infection was probably due to association of the diphtheria organism and the streptococcus These cases were characterized by the presence of hæmorrhagic sloughing membranes, high temperature, great prostration and rapidly fatal termination

The Registrar of the University of Manitoba has received a cable from the Commissioners for the Exhibition of 1851 to the effect that a Scholarship has been awarded to Douglas Roy McCullagh, B.A., M.Sc., a graduate in arts and science of the University of Manitoba and a former medical student Mr McCullagh, whose father is Rev Dr McCullagh, now of Boissevain was full time demonstrator in biochemistry in 1926-27 under Prof A. T. Cameron, and pursued his work for the M.Sc. degree in biochemistry In 1927 he proceeded to Cambridge, where he has worked under Sir F. G. Hopkins He has published in the *Biochemical Journal* a paper on a pancreatic factor, not yet isolated, controlling muscle metabolism

SASKATCHEWAN

The annual meeting of the Saskatchewan Medical Association will be held at Prince Albert, September 13th and 14th. An excellent program has been arranged. The speakers will be Dr Primrose, Toronto, Dr J. C. Meakins, Montreal, Dr Roscoe Graham, Toronto, Dr F. F. Tisdall, Dr T. C. Boutley, Dr G. Harvey Agnew, of Toronto

An extra mural post graduate tour was conducted in this province from July 7th to 18th Lectures were given at the following points Swift Current, Moose Jaw, Weyburn, Regina, Broadview, Melville, Saskatoon, Prince Albert and North Battleford The lectures were conducted by Dr A. P. Hart of Toronto and Dr H. P. Wright, Montreal, and Dr Wm. A. Gardner, Winnipeg

The following medical men have recently registered in this province and are now practising at the following points C. J. Houston, M.D., L.M.C.C., Yorkton, Sigga C. Houston, M.D., L.M.C.C., Yorkton, J. B. Legault, M.D., L.M.C.C., Domremy, J. B. Swinden, L.R.C.P., L.R.C.S., Edm., L.F.P.S., Glas, L.M.C.C., Rose Valley, James Robinson, M.D., L.M.C.C., Bienfait, Wm. D. McPhail, M.D., L.M.C.C., Kindersley, R. E. Brown,

M.D., L.M.C.C., Regina, R. S. Conn, M.D., L.M.C.C., Regina, L. M. Fairbairn, M.D., L.M.C.C., Estevan

Dr G. R. Davison, formerly of Wiseton, is now practising at Springwater

Dr Leo Langlois, of Marcelin, is now practising at Prince Albert

Dr D. W. Ganton, who formerly practised at Park side, is now at Henribourg

Dr D. A. McKay, of Radville, has opened an office at Crane Valley

Dr J. M. Burnett, formerly of Verwood, has opened an office at Colgate

Dr F. H. Wheeler of Moose Jaw, is now practising at Neville

Dr N. Bellas, who practised at Saskatoon, has moved to Madison, Wisconsin, U.S.A., where he will do institutional work

ALBERTA

The annual meeting of the Alberta Medical Association will be held at Edmonton on September 18th, 19th, and 20th

The annual meeting of the Alberta Hospitals' Association was held in Calgary on June 25th and 26th, and

was well attended by representatives from many of the hospitals throughout the province

The following officers were elected for the coming year: Honorary President, Dr R. G. Brett, Banff, President, Dr A. H. Baker, Calgary, Vice President, Dr A. E. Archer, Lamont, Secretary, Dr J. A. Montgomerie, Edmonton.

The meeting of the Alberta Association of Public Health Officers was held in Calgary during the same period, and some of its sessions took place jointly with those of the Hospitals' Association. Several papers of much interest were read, and proposals made for the betterment of hospital affairs and of health conditions in the province.

Dr A E Archer of Lamont presented a paper on the "Health Inventorium," a name suggested by the American College of Surgeons "as one by which might be organized the facilities of the staff and equipment of the hospital, in such a manner, that it would be feasible to conduct thorough health examinations periodically for any member of the community. Such an individual having these periodic examinations would know what were his health assets and his liabilities, and he would be the better able to plan his mode of living with intelligence and in greater safety. Each standardized hospital should set aside a room in which the family doctor could make his examination and have at hand every possible equipment, laboratory, x rays, etc., as well as provide consultants to determine as accurately as possible the patient's condition."

Dr M B Bow, Deputy Minister of Health, placed before the meeting a proposal "for the establishment of a district health department or unit where several municipalities might be grouped together, and whose medical needs would be under the control of a thorough trained and competent health department, instead of under a medical health officer acting under a small retaining fee." Each unit would consist of twenty-five thousand inhabitants.

The Alberta Association of Public Health Officers elected the following officers: President, Dr T H Whitelaw, Edmonton, Vice President, Dr Duncan Gow, Calgary, Secretary Treasurer, Dr S Main, Edmonton.

The second of this year's extra mural post graduate tours was held between July 3rd and 16th, and from every point of view was entirely successful. We were fortunate in having a group of clinicians who were able to give instruction of such excellent quality in the special work in which each is engaged. Every lecture and clinic was well attended and followed with great interest. There was more general discussion at these meetings than usual, which gave them an additional value.

Dr G R Pirie and Dr S G Ross, of Toronto University, Dr J G McKay, Superintendent of the British Columbia Mental Asylum, and Dr J W Arbuckle, of Vancouver, comprised the list of visitors. The cities and towns visited were Medicine Hat, Lethbridge, Calgary, Drumheller, Hanna, Red Deer, Stettler, Camrose, Edmonton and Vermilion.

At Calgary, on July 5th, clinics or talks were given at the General Hospital in the morning by Dr J W Arbuckle, on "Eclampsia", by Dr G R Pirie, on "The rheumatic heart in children", by Dr S G Ross, on "Pneumonias of childhood".

In the evening at the Country Club, lectures were given by Dr S G Ross, on "Diarrhoea and vomiting in children", by Dr J G McKay, on "Psychiatry as pertaining to general practice", and by Dr G R Pirie, on "Constipation in Children".

An advisory board to the Department of Health has been named by the Provincial Government. The personnel consists of Dr W A Wilson, President of the College of Physicians and Surgeons of Alberta, who will represent the medical profession, Dr George Johnson, Registrar, representing the College of Physicians and Surgeons, Professor E L Pope, representing the Faculty of Medicine of Alberta University, Dr D Gow representing the Association of Provincial Health Officers, Dr R H Smith, representing the Superintendents of City Hospitals. Representative for the

rural municipal hospitals, C Stevenson, Secretary, Red Deer Municipal Hospital. The Alberta Nurses Association will have a representative, and there will be two lay women and two laymen representatives.

The travelling tonsil clinics still continue to function in this province. From recent reports they are not seeking the assistance of local physicians. In answer to the criticism made during the past year that children were not properly examined prior to tonsillectomy, the government has appointed Dr Heber Jamieson of Edmonton to the staff of the clinic.

There has been considerable agitation in several of the municipal hospital districts that sub-hospitals be established in towns nearby to the municipal hospitals. These municipal hospitals have filled a long felt need in country districts. Moreover, the ratepayers have hospitalization at one dollar a day, yet experience has shown that where the hospital district covers several towns or villages, the physicians in the remaining villages, other than the one in which the hospital is located, are simply emergency men and are unable to make a living. The result has been that in some of the smaller towns the residents are without a physician. Unless sub-hospitals are established, or unless the government permits of smaller taxable areas for the erection of six or eight bed hospitals, the present state of affairs will be aggravated.

Plans for extensive additions to the Royal Alexandra Hospital, Edmonton, were recently passed upon by the Hospital board and forwarded to the City Council with the recommendation that they be adopted and the required funds be raised. The cost of the new wing will be about \$178,000.00, and of the nurses' home \$80,000.00. For some time the accommodation in the hospital has been greatly taxed.

Dr W A Wilson, of Edmonton, President of the Council of the College of Physicians and Surgeons of Alberta, is attending the Canadian Medical Association meeting at Charlottetown, where he will give a review of the new laws recently passed by the Alberta Legislature, affecting the medical profession.

Dr J H Egbert, of Halkirk, is now practising at Berwyn, in the Peace River District. Dr M Mates of Kitscoty has also located at Berwyn.

Dr Wilbur McPhail, until recently associated with Dr Swartzlander of Oyen, is now in practice at Kindersley, Saskatchewan.

Dr W F Carscallen, of Bowden, has taken over the practice of Dr C V Scott, of Innisfail, and has entered into partnership with Dr C A. Wagner of this town. At present Bowden is without a physician.

Dr Arthur Scott, a graduate of Toronto University, has become associated with a group clinic of Drs Macnab and Lincoln of Calgary, as pathologist.

Dr Percy H Sprague, a graduate of Alberta University in 1927, is now associated with Dr J V Baker of Edmonton, having spent the past year in the Provincial Pathological Laboratory.

Dr T G Michie, of Edmonton, is at present acting as locum tenens at Kimberly, B.C., before entering on post graduate work in the east.

Dr C H McKenzie, recently stationed at Wainwright, has accepted the appointment of physician to the municipality of Ituna, Saskatchewan.

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Dr James Kenny, formerly of Retlaw, is now practising in Buffalo, N.Y.

Dr E. A. Johnson, a recent graduate of Alberta University, is looking after the practice of Dr F. F. Law, of Tofield, during his absence.

Dr Charles B. Rich of Manitoba, is now in practice at Kitscotv.

Dr L. L. Cairns of Trochu has moved to Calgary.

Dr J. R. Dean of Elnora has taken over his practice.

Dr E. McGregor, who has been associated with Dr

R. Parsons of Red Deer, has left for Philadelphia. His place will be taken by Dr Ernest Hunt, a graduate of Toronto University 1927, who has completed a year's internship at the Toronto General Hospital. Dr Hunt is the son of Mr W. G. Hunt, Associate Secretary of the Alberta Medical Association.

Dr Terence Agnew, of the 1928 class of Alberta University, has opened an office at Peace River Crossing. Dr W. Barr Murray, of the same class, is practising at Irma.

Dr W. G. Saunders of Sedgewick is now associated with Dr G. M. Little of Viking. There is a municipal hospital at this point. G. E. LEAFMOUTH

BRITISH COLUMBIA

The annual meeting of the Fraser Valley Medical Society was held on June 19th, when the following officers were elected for the ensuing year: President, E. H. McEwen, New Westminster; Vice-President, Bruce Cannon, New Westminster; Secretary, H. L. Collins, New Westminster; Chairman of Program Committee, W. A. Robertson, New Westminster.

The Pacific North West Paediatric Society met in Vancouver on June 28th, and the Canadian Association for the Study of Children's Diseases met the following day at the Hotel Georgia. Both meetings were well attended. Among the speakers were Drs H. B. Cushing and A. W. Canfield, who are touring British Columbia under the Canadian Medical Association post graduate committee. Other speakers were Drs Geo. R. Pirie, H. P. Wright, A. P. Hart, H. Spohn of Vancouver. Golf proved a welcome change from too keen an attendance at lectures.

Dr A. S. Lamb, Government Inspector of Hospitals and Travelling Medical Health Officer of British Columbia, together with Dr A. D. Lapp of Tranquillo

Sanatorium are leaving at the end of August from Quebec, to attend the International Tuberculosis Conference in Rome. Some thirty medical men are making the trip under scholarships from the Sun Life Insurance Company. In addition to attending the conference in Rome, the party will attend clinics in England, Scotland, France, and other European countries.

Dr D. E. H. Cleveland has been elected a member of the British Association of Dermatology and Syphilology (Canadian Branch).

Dr W. W. Chipman has left Vancouver for the east, and will go on to Europe, where he intends doing post graduate work in Vienna and other centres, returning to British Columbia in about three months.

Dr C. W. Prowd, Radiologist of St. Paul's Hospital, and Dr H. H. McIntosh, of the X-Ray Department of the Vancouver General Hospital, have left to attend the International Congress on Radiology at Stockholm.

UNITED STATES

The Inter State Post Graduate Assembly of North America will hold its convention this year at Atlanta, Georgia, from October 15th to 19th. A splendid program has been prepared. The morning of each day is devoted to diagnostic clinics, conducted by some of the most outstanding men in the profession in the United States.

Symposia will be held on malignant diseases, gynecology, diseases of the genito-urinary, cardio-vascular, respiratory, gastro-intestinal and central nervous systems, and on diseases of the liver and gall bladder.

Among the visitors from outside the United States are a number of well known medical men from Great Britain, Northern Ireland, and Canada. These are, G. E. Waugh, M.D., F.R.C.S., London; Charles Macauley, F.R.C.S., Edinburgh; Sir James Dundas Grant, F.R.C.S., London; Hugh Thursfield, F.R.C.P., London; A. Ralph Thompson, F.R.C.P., London; William Ibbotson, F.R.C.S., London; J. E. R. McDonagh, F.R.C.S., London; T. P. Dunhill, F.R.C.S., London; L. S. T. Burrell, M.D., London; L. S. Dudgeon, F.R.C.P., London; Farquhar Macrae, F.R.C.S., Glasgow; Otto F. Leyton, F.R.C.P., London; J. Howell Evans, F.R.C.S., London; Archibald Young, F.R.C.S., Glasgow; Donald Core, F.R.C.S.,

Manchester; L. L. Cassidy, F.R.C.S.I., Dublin; Sir Farquhar Buzzard, Oxford; F. W. Marlow, Toronto.

From other countries come, Drs. Edmund L. Gros, Paris, France; C. Beuttner, Geneva, Switzerland; D. J. Cranwell, Buenos Aires, Argentina; and Morris Roth, Geneva.

The program, as put forth, is of the highest interest and importance, and the convention will be well worth attending.

The 57th annual meeting of the American Public Health Association is to be held this year in Chicago, Illinois, from October 15th to 19th, with the Hotel Stevens as Association Headquarters. The American Child Health Association and the American Social Hygiene Association are to meet at the same time with this organization. The chairman of the local committee is Louis E. Schmidt, M.D., and the secretary is Arthur E. Gorman.

It should be noted that the annual meeting of the Canadian Public Health Association in Winnipeg will be held on October 12th, 13th and 14th, making it most convenient for those planning to attend the meetings of both associations.

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GENERAL

According to a report issued by the Health Organization of the League of Nations, there has been a great decrease in the incidence of small pox in European countries during recent years. The only exception to this general rule is offered by Great Britain, where there has been a steady increase in the number of cases officially reported since 1920. In 1927 there were 14,931 cases in Great Britain, as compared with 6,841 in the rest of Europe. The disease is common only in a mild form, known as alastrim, but this mild form has been notably absent from Continental Europe, with the exception of Switzerland, where between 1921 and 1926 it persisted in epidemic form. In 1927, however, no cases were reported in that country. Despite the large number of cases in Great Britain, the mortality has been very low, no deaths having occurred in Scotland between 1922 and 1927, and only 49 deaths in 1927 in England and Wales. During the period under review the disease was limited largely to the north of England and the Midlands. Of 10,141 cases reported in 1926, 10,070 were reported from Durham (6,645), Yorkshire (1,270), Derbyshire (982), Northumberland (843), Nottinghamshire (191), and Lancashire (139). During the winter of 1927-28 a wider diffusion of infection occurred, 4,711 cases were reported from 38 counties in England and Wales in the first quarter of 1928, but the mortality has been almost negligible. The report states that vaccination within ten years appears to give complete immunity to the disease. Thus in 1926 there was not a single case among children below 12 years of age who had been vaccinated in infancy, whereas there were no fewer than 3,980 cases among children below 12 years of age who had never been vaccinated. That part of the report dealing with Russia shows a remarkable decrease in the number of cases since the war. In 1919 there were 186,755 cases, which gives a rate of 30 for every 10,000 inhabitants, in 1926 there were only 16,547 or 1.1 to every 10,000 inhabitants, in 1913 there were 4 cases to every 10,000 inhabitants. No case of small pox was reported in Bulgaria, Czechoslovakia, Denmark, Gibraltar, Hungary, Lithuania, Luxembourg, Malta, or Rumania in January or February of this year.

The tenth international medical post graduate course, with special reference to balneology and balneotherapy, will be held at Carlsbad from September 23 to 29, 1928. Clinicians and scientists from the medical faculties of Austria, Bulgaria, Czechoslovakia, Denmark, England, France, Germany, Italy, Norway, Poland, Sweden, Switzerland, and the United States of America will give addresses. England will be represented by Professor Hugh MacLean and Dr George Graham. An invitation

is extended to all medical practitioners. Those who accept will receive a passport visé without charge and a 33 per cent reduction on all state railways in Czechoslovakia. A program of entertainments has been arranged. Full information may be had from Dr Edgar Ganz, secretary of the medical post graduate course, Carlsbad, Czechoslovakia.

It is announced in the January issue of the *British Journal of Anaesthesia* that a prize of £50 is offered in commemoration of the late Dr Sidney Rawson for the best research on inhalation anaesthesia between now and December 1st. In sending the essay a *nom de plume* is to be used, further information may be obtained from the editor of that journal "Ainsdale," Palatine Road, Withington Manchester.

Ten lectures will be given at the Hôpital de la Charité, 47 rue Jacob, Paris, with roentgenologic projections and anatomical specimens, on the subject of diseases of the bronchi. Each lecture will be followed by practical demonstrations by MM. Bordet, Oury, Turpin, Kourilsky, and Benda.

The lectures will take place from October 29th to November 3rd, inclusive.

In the morning practical demonstrations will be made in the wards under the guidance of Professor Sergeant.

The afternoon will be devoted to theoretical courses (from 2 30 p.m. to 3 30 p.m., and from 4 p.m. to 5 p.m.).

PROGRAM

Dr F. Bordet, "Lipiodol in the diagnosis of the diseases of the respiratory tract," (two lectures)

Dr Oury, "Bronchial forms of pulmonary tuberculosis,"

Dr Turpin, "Carcinoma of the bronchi," (two lectures)

Dr Kourilsky, "Lung abscess," "Bronchiectasis," (two lectures)

Dr Benda, "Bronchial forms of pulmonary syphilis," (two lectures)

Fees 500 francs (about \$20)

A certificate, signed by the Professor and the Dean of the Faculty of Medicine of Paris, will be given after the course to every doctor who has attended it regularly.

Dr Julius Wagner Jauregg of Vienna, who discovered the malarial treatment of patients with general paresis, has been awarded the Nobel Prize in Medicine for 1927.

Sleep Affected by Orientation (Points of the Compass)—Researches of Féré, Duchatel, Waucollier, and Reichenbach show that the position most favourable for regular and sound sleep is with head to the north, and the worst position is with head to the west. A series of carefully conducted tests of the variation of

blood pressure, of the different constituents of the blood, etc., prove that these are least when the person is lying with head to the north. This may explain the calm and restful sleep many persons enjoy when lying in this position.



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CANADA

Book Reviews

Four Centuries of Medical History in Canada John J. Heagerty, M.D., D.P.H., Department of Health, Ottawa. Two volumes. Vol. 1, xiii and 393 pp., 14 illustrations, vol. 2, vii and 374 pp., 24 illustrations. Price \$12.00. The Macmillan Co. of Canada, Limited, Toronto, 1928.

The publication of these volumes is a distinct event in the history of the medical profession in Canada. As Dr. Heagerty well remarks in his preface, "In no country is the history of medicine so well-preserved as in Canada, in no country is the story so all-absorbing, so replete with striking incidents." Hitherto, numerous, but disjointed, portions of this story have appeared in various magazines, in transactions, and formidable archives, and we indeed owe a debt of gratitude to those who have striven to give us some idea of the wealth and value of our historical heritage. Among these we may mention specially D. A. Campbell and W. H. Hattie, in Nova Scotia, M. P. G. Roy, E. Z. Massicotte, P. L. N. Beaudry, the Abbé Casgrain, M. J. and Georges Ahern, A. H. David, Sir William Osler, W. H. Drummond, John McCrae, Maud Abbott, H. S. Birkett, M. Charlton, Sir Andrew MacPhail, in Quebec, and William Canniff, A. H. Wright, H. B. Anderson, and Thomas Gibson, in Ontario. Particularly noteworthy are *The History of Medicine in Lower Canada*, by Miss M. Charlton (*Annals of Medical History*, 1923, V, pp. 150 and 263, *ibid.*, 1924, VI, pp. 223 and 312), and *The Medical Profession in Upper Canada*, by Canniff (Briggs, Toronto, 1894). But, interesting and important as these are, they are but partial accounts. Dr. Heagerty's special merit lies in the fact that he has gathered together records, not easily accessible to the general reader, and has made them readily available to the student of medical history.

One has only to open the book to see where Dr. Heagerty's affections lie. With scarcely any preamble he plunges at once into the history of the great epidemics which have devastated Canada from the earliest times,—Mal de terre, small pox, mal de Siam, plague, ship fever, mal de la Baie St. Paul, leprosy, cholera and influenza. This takes up 212 pages out of a total, in the first volume, of 393, the consideration of Public Health takes up 56, in addition to 50 more in the second volume. This ensures very thorough treatment. The balance of volume two deals with medical schools and hospitals, and there is an appendix on the medical history of Newfoundland.

This topical method of dealing with the subject is due to the desire of the author to create a work of reference for the student of Canadian medicine, rather than to write a story. In pursuance of this design the bibliography and the index are arranged topically also, which makes for ready reference. In consequence, much of the romance of the story is lost. Yet, so much is inherent in the subject that it inevitably crops out and does much to lighten the narrative.

As might be expected, the older settlements in the east receive the greater share of attention. Their recorded history goes back three hundred years and the record is remarkably complete, still the west is not forgotten.

The chapter on the pioneer physicians in the various provinces is good and of the highest interest, as are also the chapters dealing with medical societies and medical journals. The chapter on Medical and Surgical Progress is inadequate, considering the importance of the subject, occupying a scant seven pages. Medical legislation is dealt with in a helpful way. We note that the first medical society in Canada was the Quebec Medical Society, founded in 1826.

The illustrations are well selected but poorly executed. That of the Hôtel Dieu of Montreal is particularly bad. This is unfortunate, as this fault detracts from the appearance of an otherwise very pleasing bit of craftsmanship. A few typographical errors were noted in the first glance over the work, which will, doubtless, be corrected in another edition. In volume one, page 71, the word "hemorrhagic" is spelled "hemorrhagic" three times, on page 6 "Lorraine" should be "Lorraine," on page 225, "St Corne" should be "St. Come."

It may truthfully be said that Dr. Heagerty has performed a signal service in bringing together so much interesting and valuable material in connection with the many and varied activities of our profession. Only those accustomed to literary work can appreciate the amount of time and industry required to consult the records as the author has done. A valuable feature, also, is that Dr. Heagerty has endeavored to let the various authorities speak for themselves, and quotes many of the more important records verbatim, or translates them literally. The result is an authoritative work, which will be for long what the writer wishes it to be a reliable work of reference. It may well prove the inspiration for others to bring out works on certain aspects of Canadian medical history, perhaps along other lines, but which will add to our store of knowledge on the subject. *Four Centuries of Medical History in Canada* should be in the hands of every medical man in this country.

A. G. NICHOLLS

Die Aeusseren Sekretion der Verdauungsdrüsen. B. P. Babkin, M.D., D.Sc. xiii and 886 pp., 145 illustrations. Second edition. Price (unbound) 63 reichsmarks. Julius Springer, Berlin, 1928.

This book on *The External Secretion of the Digestive Glands* forms volume XV of a series of monographs dealing with the whole range of the physiology of plants and animals, edited by Drs. Gildemeister (Leipzig), Goldschmidt (Berlin), Neuberg (Berlin), Parnas (Lemberg), and Ruhland (Leipzig). The first edition appeared in 1914.

Professor Babkin was for ten years assistant to the renowned Parnas in St. Petersburg, and himself assisted his teacher in the elucidation of many of the important problems connected with the function of digestion which the latter dealt with so helpfully in his epoch-making work of 1898. In this first edition all the work done on the subject in various countries was for the first time brought together.

In this, the second edition, the author has preserved the general plan of the first, giving, where possible the original work and the particular methods of research on which his conclusions are based, but he has also collected and collated the vast literature on the subject that has accumulated between 1914 and 1927. He has more fully elaborated his text, and has added some new chapters, such as, *The Continuous Secretion of the Gastric Juice*, *The Blood-supply of the Pancreas*, *The Secretion of Bile*, *The Function of the Gall-bladder*, and *Some Motor Phenomena of the Alimentary Canal*. The second edition, then, is practically a new book, but yet preserves the spirit of the first.

Professor Babkin brings unusual qualifications to his task. Thoroughly grounded in his subject during his long association with the great Russian physiologist, he became professor in the University of Odessa, after the revolution he was enabled to make his escape to England, and worked in the Physiological Laboratories of University College, London, where he obtained his D.Sc. degree, he came to Canada in 1924 as Professor of Physiology in Dalhousie University, Halifax, and has quite recently been appointed a Research Professor in Physiology at McGill. Well acquainted with English, French, German, as well as his native Russian, he is particularly well fitted to cover the extensive literature of his subject. This he has done well, and, perhaps, for the first time in an important work published under German auspices has justice been done to the research workers in other countries. The scope of the research in this particular can be seen from the fact that out of about 2,600 references more than 900 are to British and American work. Among Canadians remembered are, Archibald, Collip, Drever, Meakins,

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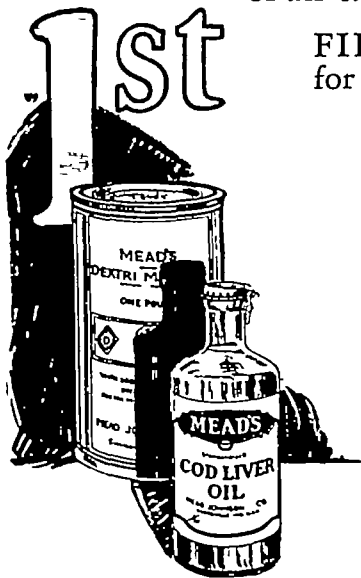
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The book is divided into seven sections, dealing respectively with the salivary glands, the gastric glands, the pyloric portion of the stomach and the Brunner's glands of the duodenum, the pancreas, the secretion of bile and its discharge into the duodenum, the glands of the small and large intestines, and the motor phenomena of the alimentary canal

Each section is introduced by a brief account of the anatomy of the organs concerned. The operative technique in connection with the various experimental manipulations referred to is given in the necessary detail, with often, explanatory drawings. The various stimuli, the innervation, and the chemical constitution of the various excretions are fully given

While to a large extent dealing with theory and the pure science of the subject, the book is intended at the same time to be practical and of value to the clinician. Hence we find such subjects dealt with as the relationship of the saliva to dental caries, and the application of gastric physiology to the elucidation of surgical problems connected with the stomach

The book has the usual appearance of the German scientific monograph, with clear text and convenient references. As might have been expected, it is well arranged exhaustive, and simply written. No important detail is lacking. In the judgment of the reviewer, Professor Bablin's work is one of great value, the most complete, and the most authoritative on the subject that has yet appeared

A G NICHOLIS

Atlas der Histotopographie gesunder und erkrankter Organe von Dr. Erwin Christeller, Direktor der Pathologisch Anatomischen Abteilung des Städtischen Rudolf Virchow Krankenhauses in Berlin. With 192 directly reproduced coloured prints in 88 plates and 4 text figures. Published by George Thieme, Leipzig, 1927. Bound in linen with gold lettering

In this handsome volume the results of the author's researches into the structural relations of the body tissues in normal and diseased states by his own method of making frozen sections through entire organs for microscopic study and demonstration purposes, are set forth with much technical skill and in a highly instructive context. Its publication marks a new departure in the art of scientific reproduction, in that the negatives for the printers' use in the coloured plates are made directly from stained and mounted frozen sections, without the intervention of photographic prints, and it also represents a distinct advance in the field of tissue diagnosis and pathological research, in that the histological picture of the entire organ so obtained supplies a topographical survey of the interrelations of the disease process along its zone of delimitation or advance that is of the greatest possible value. As the author puts it in his Foreword, we have before us not merely a mass of authentic pathological data for the inspection and information of students, specialists, and research workers, rather it is his intention to show here that, from the employment and extension of technical methods in common use, a real step forward has been made both from the diagnostic and didactic standpoints, and new paths established for the successful investigation of the combined macro and microscopic phenomena of disease. Up to this time this topographical method has been largely neglected. Small pieces of tissue are taken from suspected points and their relation to each other laboriously reconstructed with a necessary element of uncertainty that often leaves room for doubtful conclusions. Frozen sections through the entire organ taken in such a way that its normal contour and relations are preserved, cut sufficiently thin for microscopic study and cleared, stained, and mounted under a coverglass are substituted to great advantage. Neuropathology was the pioneer in this field and the central nervous system has long been studied with the help of serial sections through the entire brain differentiated by

special stains and fixed in celloidin. Never before have such large frozen sections been cut from other organs, and the results, as shown in this Atlas, are highly illuminating

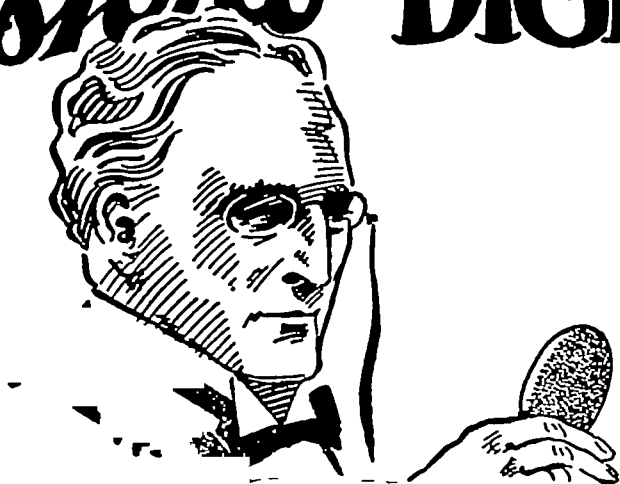
The volume contains some nineteen pages of Introduction, setting forth the advantages of this method, which is used as a routine process by Dr Christeller and is found much cheaper and simpler, as well as yielding much positive histotopographical information that can be contained in no other way, and a minute description of the technique, both of preparing the *Gesamigefrierschnitten* (total frozen sections), and of the reproduction by the printers from negatives, in three colours, prepared direct from the mounted section. This is followed by some 160 pages of the Atlas, in the plates of which the direct colour print of the section (enlarged one-half) is shown side by side with a three colour reproduction of its microscopic appearances made under a low power magnification from the same section, and with a three colour print from another section through a normal organ of the same kind. On the page opposite to the plates full clinical data with descriptions and key to the lettering of the sections are given, so that each represents to the student a true clinico-pathological entity

The advantages of this method are to the author a matter of daily experience. The proportion of correct tissue diagnoses achieved by him by means of these large frozen sections has been far above that obtained from smaller sections, and he insists that no one who has become accustomed to glance over the entire extent of an organ in this way for patchy areas of disease or a border of delimitation would ever consent to relinquish it. Researches have been made in his laboratory with the assistance of these large frozen sections into the subject of hypertrophy of the prostate (200 cases), tumours of the urinary bladder, the histotopography of gonorrhoea, the distribution of neolymphoid tissue in the kidney and appendix, the study of cell emboli and tumour metastases. For instruction and demonstration purposes to students these preparations have proved themselves invaluable, combining as they do the macroscopical impression of the complete organ and the pathological changes in it, with the differentiation of tissues by the various colours obtained by contrasting staining methods which are readily employed, the section being first mounted on its glass slide, and fixed in place with a thin coating of celloidin. Such stained sections are used for direct observation in the hand, or as transparencies by transmitted light, in which case they may be mounted on opaque glass enclosed in wooden frame and conveniently hung in a window. Or they may be shown to great advantage to large classes with the projector, by which their histological details are magnified as readily and as satisfactorily as is the case with an ordinary microscopic slide of small size

It is also an extraordinary advantage that these large frozen sections lend themselves so readily to direct colour reproduction for publication without the intervention of a photographic print, and that enlargement in the process of printing secures more and more perfect detail, whereas, in printing from a photograph, enlargement merely brings the structure of the raw material of the paper itself into evidence, and must therefore be avoided

The greatest value of all however lies in the working over of these large sections (which are usually 20 to 30 microns thick) by the microscope with increasing powers. The possibility of examining all parts of the organ by the magnification one chooses, makes the combination of macro and microscopic relations conspicuously helpful and enables one to win in this way an entirely new oversight of the field of normal and pathological histology in an easily demonstrable form. The author warns however against any idea that through its portals a 'new Atlantis' is to dawn for this subject, for the reason that the relatively low magnification

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sera which have been employed in treatment, since they are really antistreptococcic sera

There is a concluding chapter on the virus disease of bacteria themselves, that is the bacteriophage. It is admitted, however, that this view of bacteriophage is in dispute.

This book is well worth reading. It is evident throughout that most of the views advanced are subject to criticism, but the whole subject is brought into focus, and very full and well arranged bibliographies are provided with each chapter for those who wish to follow it further.

H. E. MACDERVOT

Text-Book of General Bacteriology Edwin O. Jordan, Ph.D. 9th edition, revised. 777 pages, illustrated. Price \$6.00. London and Philadelphia, W. B. Saunders Co.; McAmish & Co., Toronto, 1928.

The ninth edition of the well-known text-book on general bacteriology, by Professor Edwin O. Jordan, Ph.D., Chicago, Ill., has been brought up to date by the inclusion so far as possible of the latest literature. Many important sections have been revised and amplified, and a number of new text figures have also been added.

New material has been added on the rôle of streptococci in the bacteriology of scarlet fever, erysipelas and rheumatic fever. The Dicks' test and prophylactic inoculation against scarlet fever and its close analogy to the longer known Schick test in diphtheria is given due prominence. The section on the bacteriology of water now includes the recent findings and methods embodied in the Sixth Report of the American Committee on Standard Methods. The chapter on Parasitic Protozoa has been entirely re-written but it is regretted that it has not been still further extended to include the parasitic flat and round worms (Phyla, Platyhelminthes and Nematelminthes), as this would obviate the necessity of the student in elementary parasitology (this course often being included with bacteriology), purchasing a separate book on that subject. In addition to the chapters devoted to the individual groups of pathogenic micro-organisms are interesting sections on the common bacterial diseases of plants, bacteria in the Arts and Industries, and on bacteria and the nitrogen cycle.

The description of the various microorganisms is extremely lucid, and includes *Brucella abortus* and *Bacterium tularensis*. A small section of the common bacteria found in the mouth and their significance could, with advantage, be added for the benefit of the dental student and practitioner. The rôle of carriers in disease, while dealt with fairly extensively along with the individual organisms, merits, too, a separate chapter. The chapter on immunity is concise but somewhat brief. In dealing with the differential media employed in the isolation of *B. typhosus* from the feces, etc., no mention is made of MacConkey's bile salt neutral red-lactose agar, a medium which is still used in routine work in Great Britain.

The fact that the text-book has reached its ninth edition since 1908 speaks for its popularity and usefulness. It is eminently readable, accurate, sound and generally comprehensive and thoroughly deserves its continued popularity. Suitable for students and practitioners alike and also for reference by the more advanced investigator, it deals with the fundamental principles and methods of laboratory work, and includes bibliographical references to articles of classical and historical interest. The author has, so far as possible, simplified conflicting views so as to give a readable account of the subject in question, and has included references to the fields where investigation is still active or opinions are at variance, and also some giving valuable summaries of important subjects.

RALPH P. SMITH

Nutrition. Walter H. Eddy, Ph.D., Professor of Physiological Chemistry, Teachers' College, Columbia University. 236 pages. Price \$2.50. The Williams & Wilkins Company, Baltimore, 1928.

There is great need for a book on nutrition written for the general public in simple language. Such a need is met reasonably well by Dr. Eddy's small volume. The

quantitative and qualitative food values of the different constituents of a diet are dealt with, the optimum requirements of proteins, fats, and carbohydrates are stated, and the causes of variations in food value of proteins from animal and plant sources are explained. Reasons are given for our dietary requirements of different mineral elements, and there is a good account of acid base equilibrium and its dependence on diet. The necessity for roughage in a diet is emphasized, and the vitamins are dealt with very fully. Alcohol, as a nutrient, is carefully avoided.

The last one hundred pages of the text are devoted to vitamins. Although the author himself states "it is true that the presence of vitamins in the diet is essential to health, but this presence is no more imperative than calories, nutrient quality, digestibility, etc.," and although, since he himself has done much valuable vitamin research, he is naturally led to emphasize this phase of his subject, yet it seems regrettable that inevitably such a preponderance of page material on this one phase of nutrition must unduly stress it for the lay reader, so that thereby the treatment of the whole subject is unbalanced. Much of the experimental vitamin procedure that he has detailed could well have been omitted. In its place a section dealing with the effect of food-preparation on food value is badly required. The very few formulae and equations could well have been eliminated.

In spite of such imperfections, the book will have a real use in conveying to the man in the street and his wife many of the facts regarding the universal occupation of eating that we all should know, especially in these days of "purified" foods. The author's attitude with regard to food advertisements and vitamin advertisements is sound. He endorses McCollum's advice: "The place to get vitamins is in the market, in the grocery store, from the milk man, and from the garden, and not from the drug store." The physician will probably find the book of service in introducing it to patients whose co-operation in dietary measures he wishes to secure.

A. T. CAMERON

Mongolism. Kate Brousseau. Revised by H. G. Brainerd, M.D. 302 pages, 47 illustrations. Price \$4.50. Williams & Wilkins Co., Baltimore, 1928.

The material presented in this work is based upon personal experience with Mongolian imbeciles and other types of defectives, during a period of ten years. The tabulated statistics and the charts were compiled from personal observations as well as from case reports published in medical literature. More than one thousand of these were studied. From this wealth of material the authors have presented, in most excellent form and order, the best single study of this condition.

Following a brief historical review the various theories regarding etiology are thoroughly reviewed. The authors then proceed in order to discuss pathology, diagnosis, prognosis and finally the education and training of these defects. Many excellent photographs illustrating the various physical defects are interspersed throughout the text which lend materially to its value.

This monograph may well be recommended to the research worker, the psychologist and the teacher.

ALAN BROWN

The Ultra violet Rays. Their Action on Internal and Nervous Diseases and Use in Preventing Loss of Colour and Falling of the Hair. Arnold Lorand, M.D. 258 pages. Price \$2.75. F. A. Davis Co., Philadelphia, 1928.

This volume describes the experience of the author in the use of actino therapy in the treatment of a large number of internal diseases of obscure origin and doubtful etiology, ranging from hyperpiesis to canities and alopecia. Rather more than half the book is devoted to the causation and treatment of the latter conditions. In the early chapters Dr. Lorand gives an interesting résumé of heliotherapy, ancient and modern, the character of sun light under differing geographical and climatic conditions, and the varying effects of the elements of the solar spectrum.

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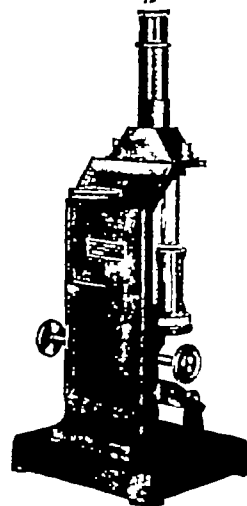
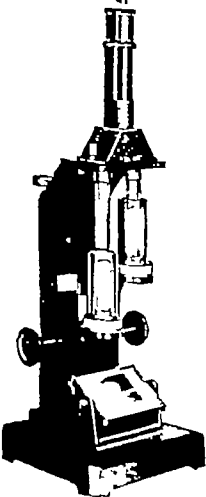
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tion are ascribed by the author to its action upon the endocrine glands and the sympathetic nervous system. In estimating the effect of treatment, Dr Lorand has made no effort to narrow the active agent down to the ultra-violet ray, but has utilized at the same time any other method of treatment which has been thought to be of value, *e.g.*, (p 87), "I have obtained the most striking results in ageing women by the administration of thyroid, ovarian and occasionally pancreatic extracts, in combination with the quartz-light, radio-active mud baths and certain amounts of iodine and arsenic"

As a spa physician Dr Lorand's patients are no doubt chiefly drawn from the well-to-do class of bored neurotics, in whom the psychological value of a new form of treatment will count for much. In the comparatively few cases of definite organic disease which he refers to (*e.g.*, gall-stones) that portion of benefit attributable to the ultra-violet ray is very indefinite indeed.

In his technique Dr Lorand is a trifle vague. "Of course the treatment should not be overdone, the sitting should not last too long, and the source of light should be neither too far or too near," (p 85).

The book will probably achieve greater popularity with the general public than with the medical profession. The language is simple, technical expressions are avoided, even the term alopecia areata is carefully defined and the statements are so general as to leave much to faith.

The publishers have done well. The book is of a convenient size, well printed in large type on good paper, and strongly bound. W T LOCKHART

International Clinics Edited by Henry W Cattell, A M, M D, and others Vol II, 38th series Price 3 00 each volume, \$12 00 for set of four J B Lippincott Co, Montreal, 1928

This volume marks another semi-centennial stage in the "International Clinics." It is the 150th volume issued since the foundation of the undertaking in 1891. There is an introductory note by Sir Humphry Rolleston recalling the fact that the 100th volume was the occasion of an article by Sir William Osler, in which he spoke of the coming of age of international medicine in America. The present editor, Dr H W Cattell, has been in charge of the "Clinics" for the greater part of the time since 1900, and has been one of the guiding influences of the publication. Dr A McPhedran in a note on Canadian contributions mentions the steady increase since the first article on insulin by Banting in 1923, although there had been a few articles from Canadian authors before that.

Taken all round, this volume is thoroughly well edited and arranged, covering a wide variety of subjects in medicine. H E MACDERMOT

An Introduction to the Technique of Section Cutting Edited by Frances M Ballantyne, M.A., Assistant in the Zoology Department, the University of Glasgow XII and 61 pp, 2 figures Price three shillings net E & S Livingstone, Edinburgh, 1928

In the introduction to this little work Professor J Graham Kerr points out the need for a satisfactory small, elementary book which can be recommended to junior students as providing reliable instruction in the ordinary stock methods of cutting microscopical sections in paraffin and celloidin. The methods described are arranged and elaborated from the notes of the late Mr Peter Jamieson, expert technician in the Department of Zoology of Glasgow, and from those of Professor Kerr.

Care is taken to put forward only the simplest and most essential elements in the technique, but the many small things that make for success are by no means overlooked. Scrupulous attention to the necessary detail is inculcated. The fixative recommended for the beginner

is a saturated watery solution of corrosive sublimate containing five per cent of glacial acetic acid. Dehydration is to be brought about by successive baths of 30, 50, 70, 90, and 100 per cent alcohol. The paraffin recommended is that of the best quality, translucent, and bluish in colour, with a melting point of 52 degrees C. It should give a metallic ring when struck on a wooden table. Simple staining, in bulk and on the slide, is described. After the bare outlines of the paraffin method have been set forth, a complementary chapter is given which contains many additional hints of value, together with certain modifications that may be required for special purposes.

The celloidin method, both for serial and single sections, is described fully, and useful hints in regard to the use of section knives are given.

The book well fulfils its purpose and can thoroughly be recommended for laboratory use to the beginner.

A G NICHOLLS

Local Anæsthesia. Geza de Takats, M.D., M.S. 221 pages, illustrated Price \$4 50 London and Philadelphia, W B Saunders Co, Canada, McAnish & Co, Toronto, 1928

This book clearly and concisely covers the whole field of local anæsthesia as we know it to-day, and as such deserves a place in the library as a text for the beginner and a reference for the initiated. Its sequence is good. It is brief and to the point and free from the monotonous preamble so frequently found at the beginning of medical books. The print is clear and easily read, and the illustrations are excellent.

The only criticism, if such it be, seems the too free use of adrenalin as a binder for the novocaine in subcutaneous and deep injections. Many of us feel that the untoward reactions, which some times occur in the use of local anæsthesia, are often, if not always, due to the patient's idiosyncrasy to adrenalin rather than the toxicity of the novocaine. A J STEWART

A Treatise on Diseases of the Hair and Scalp S Dana Hubbard, M.D. 500 pages Illustrated with 77 engravings and 4 coloured plates Price \$5.50 Lea & Febiger, Philadelphia, 1928

This treatise is a resumé of the known facts with regard to physiological and pathological conditions of the human scalp, and, as the author says, it has been compiled so as to give a practical digest of the subject.

In addition to chapters on anatomy, physiology, and clinical conditions that may be encountered in the hair and scalp, there are special chapters dealing with cosmetics, dressing and curling the hair and public regulations of beauty culture, matters that concern the barber shop or beauty shop and are not of direct medical or dermatological interest. The subject matter is essentially practical and special attention is directed to treatment.

J F BURGESS

BOOKS RECEIVED

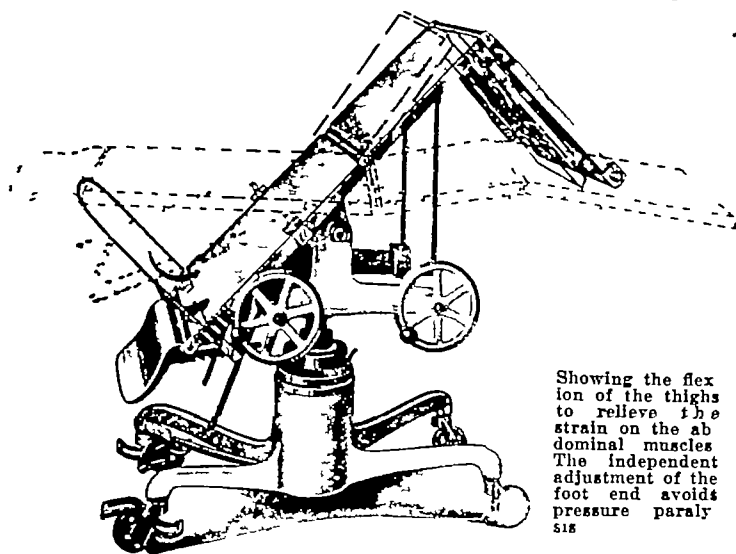
Acute Aplastic Anæmia Its Relation to a Liver Hormone A Hayes Smith 80 pages, price 6/- net H K Lewis & Co, London, 1928

A very fully recorded and worked out case report, and comparisons with other similar cases.

Surgical Clinics of North America Vol VIII, No 2 New York Number W B Saunders Co, Philadelphia, 1928

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EPIDIDYMITIS

Epididymitis in the opinion of A L Wolbarsht M D

Gonococcal Infection in the Male is by far the most frequent complication of gonorrhea and of paramount importance sociologically because of its remote consequences.

Acute epididymitis is usually accompanied by inflammation of the vas deferens of the affected side or by an inflammation of the corresponding testis or by both. There is tense swelling of the epididymis and not rarely associated inflammation with serous exudation in the tunica vaginalis. Occasionally the pain in the vas is quite severe and radiates upward and backward through the inguinal ring to the seminal vesicles which share in the inflammatory process. This referred pain may lead to the erroneous diagnosis of acute appendicitis.

Acute epididymitis should be treated by rest (physical and sexual) and elevation of the scrotum and the constant application of heat. Diathermy according to Dr C Otis Rich (Diathermy in Acute Epididymitis *Illinois Medical Journal*) yields results which vary "from the most spectacular improvement to frank disappointment." Heat in the form of antiphlogistine dressings usually gives marked relief in these painful conditions. Thermotherapy with the aid of this endermic, bacteriostatic agent is essentially decongestive and relaxant removing thereby the tension on the inflamed cord at the same time preventing blood stasis in the affected area. Being plastic adhesive non irritating and thermogenetic the physician will find in antiphlogistine a distinctly convenient method for prolonged thermotherapy with complete absence of tissue irritation or toxic action. (Denver Chemical Co New York)

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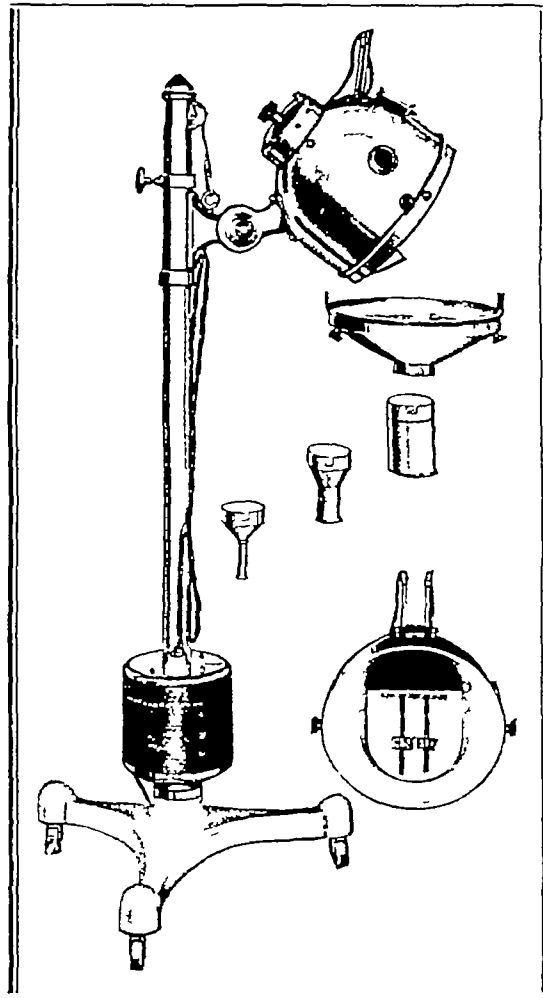
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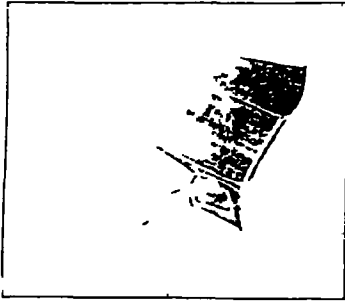
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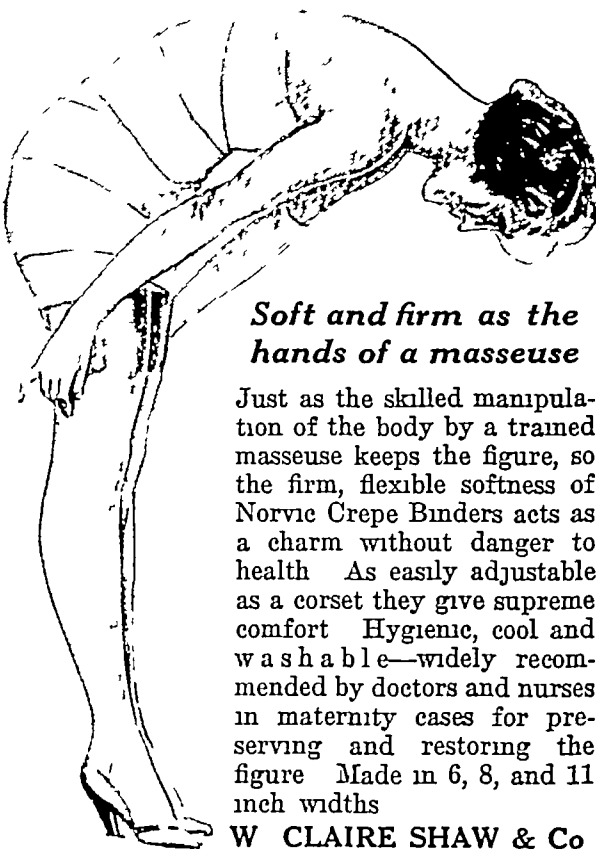
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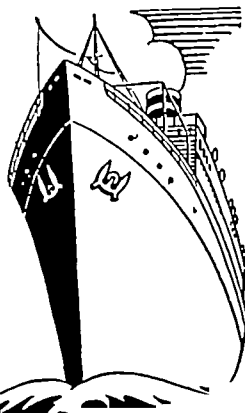
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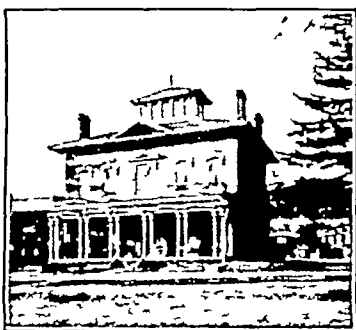
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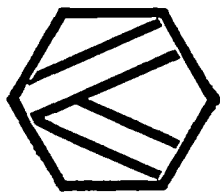
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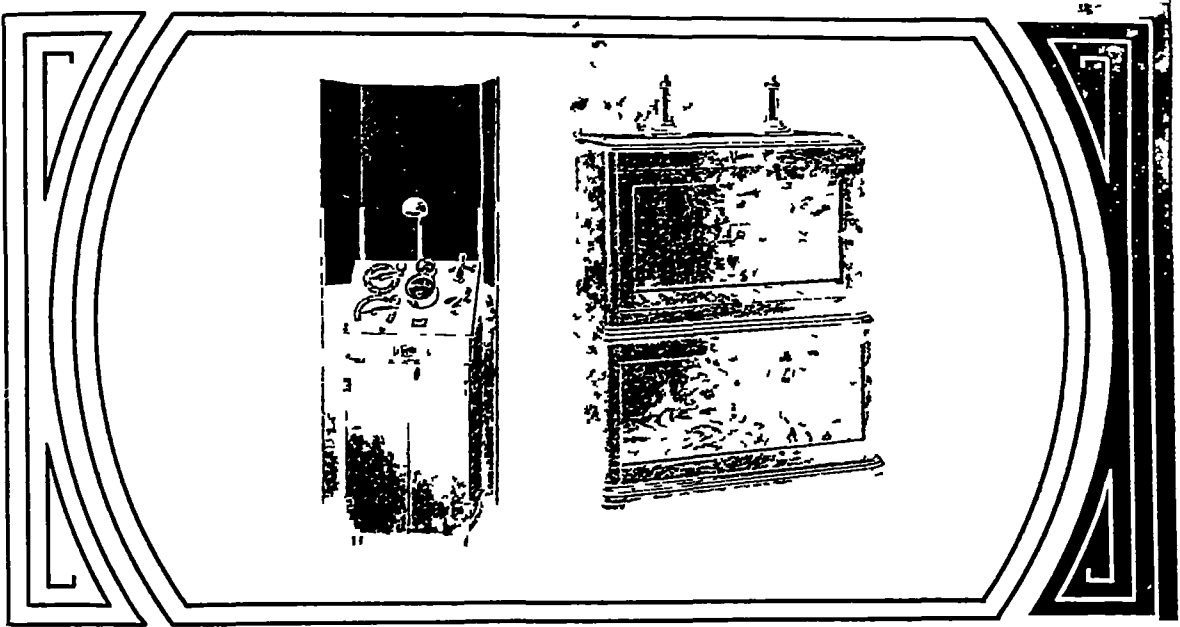
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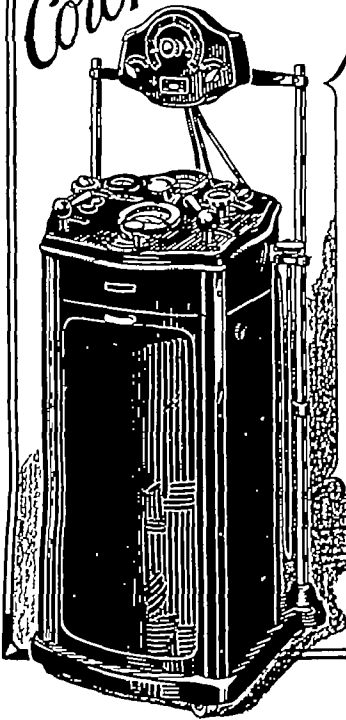
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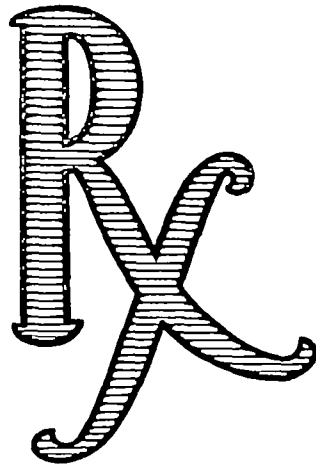
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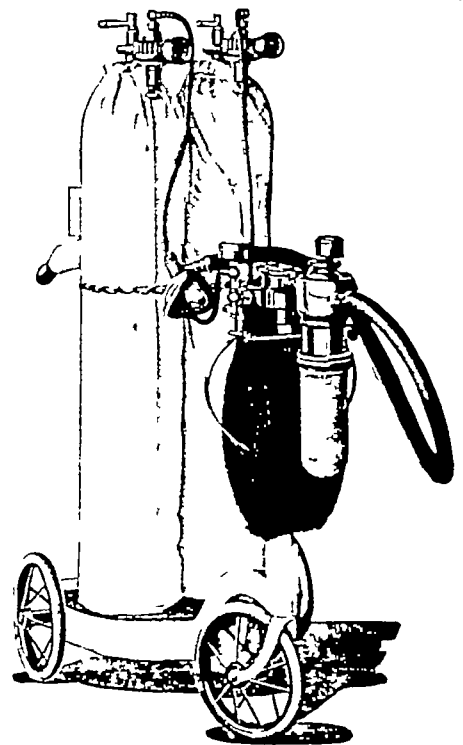
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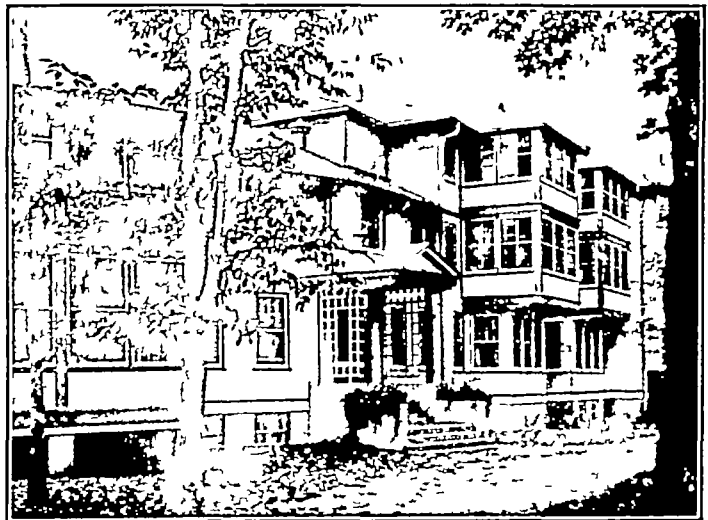
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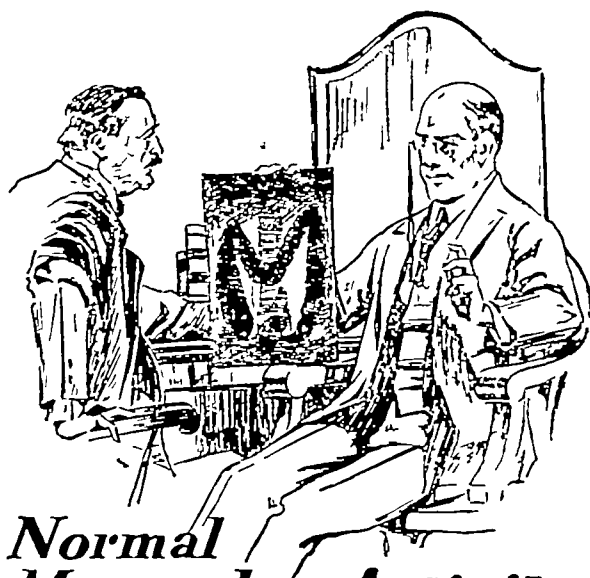
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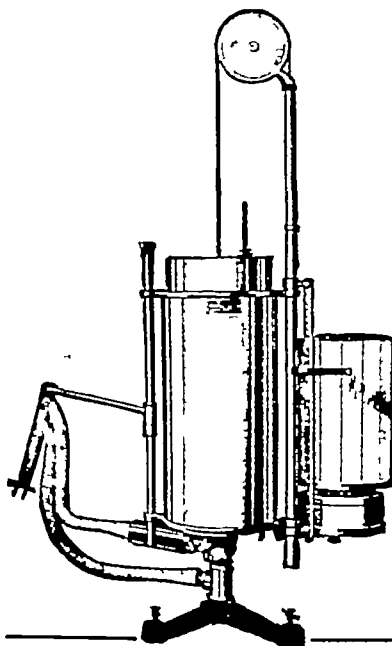
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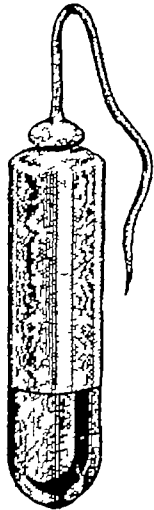
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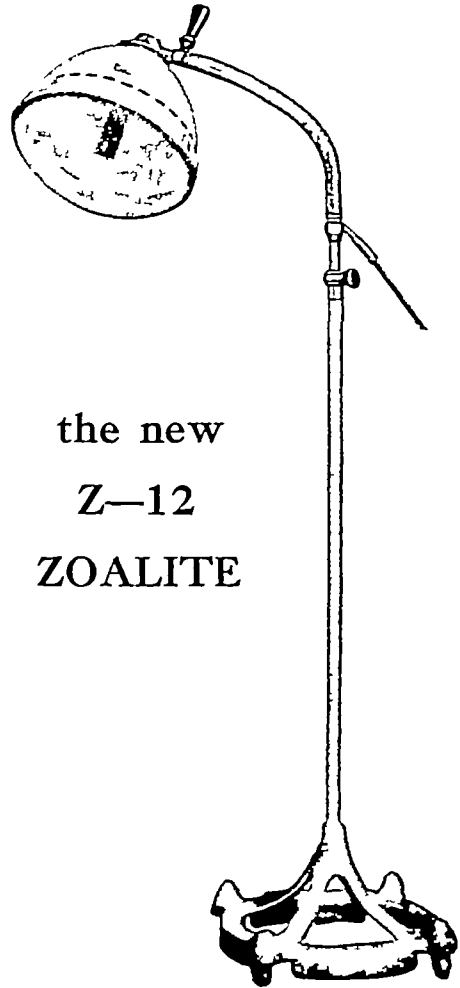
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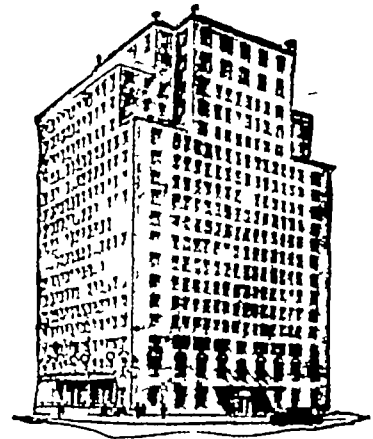
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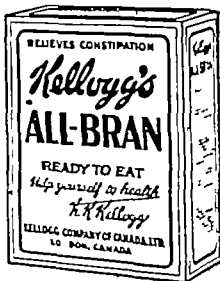
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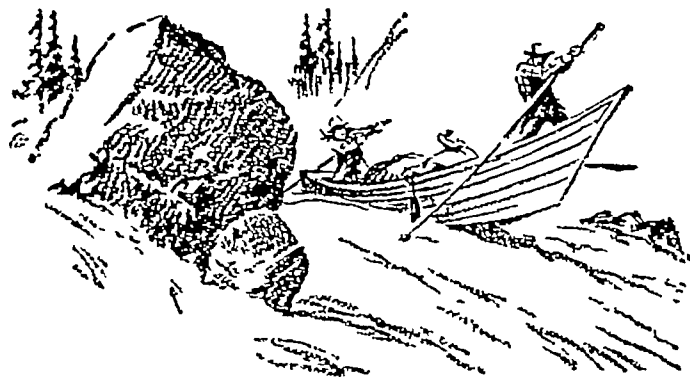
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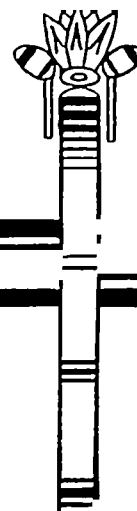
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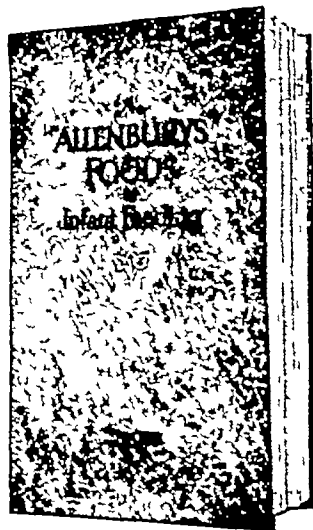
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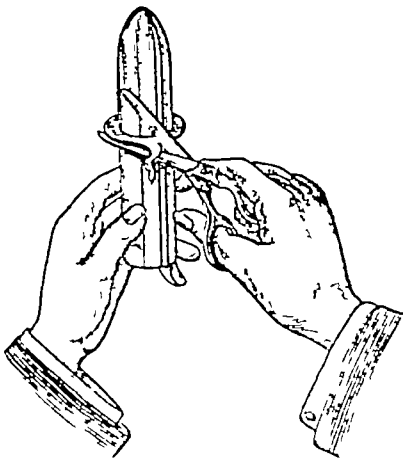
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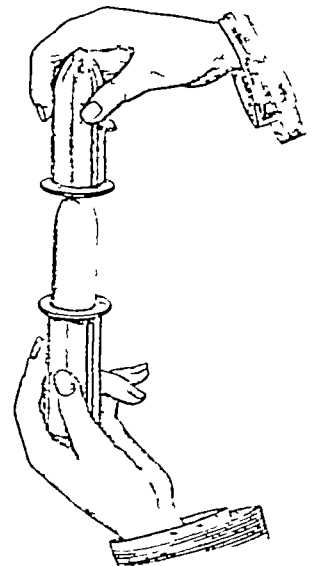
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Indeed, when you study the varied tissues of living beings, so varied as regards their histological structure, their origin, their active or passive part, you discover that there are among them very considerable differences. Some are rich in glucids, and especially in certain glucids, insoluble in the usual reagents, resisting the biochemical actions, such as those that form the supporting apparatus of the plant. Others contain a considerable quantity of mineral insoluble matter, like the bony tissue of the vertebrate animals. Still others are remarkable for the abundance of lipids, which, in certain regions of the nervous system, for instance, represent even 80 per cent of the dry matter, and a still greater proportion in the adipose tissue, which is a tissue of protection and reserve. Others are richer in proteins, like certain glandular tissues of animals, or young seedlings of plants. Finally, still others are exceptionally rich in water, they constitute in that case real "liquid tissues," as blood, for instance.

In each of these tissues, together with the predominant substance, all other sorts of chemical compounds coexist. But, if we leave this superficial way of considering entirely different substances, and come to examine more closely and individually the various tissues, instead of an impression of diversity and infinite variety we have a very intense impression of persistence in composition and stability in the chemical constitution of living matter. Let us now get acquainted with that impression by means of a few examples.

Among the constituents of the organisms, let us choose two groups: that of the *lipids* and that of the *protids*. As those two groups include extremely numerous and varied substances we must be more precise as regards them.

For the lipids, we shall consider, as a whole,

all the bodies, chemically rather different, contained in the ethero-alcoholic extract of animal tissues. I say *animal* tissues, intentionally, so as to leave aside all that concerns plants, because we should otherwise risk wandering too far afield. We shall afterwards examine those things, which, in that intricate group of the lipids, are the most accessible to precise analytical determinations: *fatty acids, cholesterol, phosphorus*.

As regards proteids, we shall localize our attention on the *nucleo-proteids*, those fundamental phosphorus constituents of the cell nucleus, so remarkable for their chemical constitution and whose influence upon the growth, the division and the nutrition of cells, can never be over-estimated.

Let us then consider the total lipid content of the tissues. We find, first, that there is a certain quantity of lipids in all the tissues. None of them are entirely lacking in them. They are fundamental constituents of the cell. We then find (and it is the real object we are concerned with) that the proportion of lipids in a given tissue is of a certain constancy.

If we consider one single animal species, and in that species, individuals placed in as nearly identical physiological conditions as possible, we shall find numbers, not the same of course, but showing only slight oscillations about those averages. There is more to say. If we consider beings belonging to different species, not too far apart in the zoological classification, we find for their homologous organs, contents in total lipids which are not very different. A given histological type of cell element has a certain constancy in its content of total lipids. This constancy, of course, is far from being absolute. When experiment gives too widely divergent numbers it proves that we must take into account, amongst other things, the notion of the physiological state, we ought also to distinguish in the general term of lipids, the real protoplasmic lipids from the reserve lipids. But, let us leave those details aside, though they are very important, and come to the more easily measurable constituents of those lipids. We already mentioned them: total fatty acids, cholesterol, lipidic phosphorus.

Let us thus make a series of quantitative measurements on those three categories of substances which are the most representative of the

group, and for which we now have very precise methods of estimation. Let us examine, with A. Mayer and G. Schaeffer, the analysis of various organs of animals belonging to different species: dog, rabbit, frog, pigeon, etc. This is what their experiments tell us:

CHOLESTEROL

1—For one given species, the dog for instance, each organ has a definite amount of cholesterol.

2—For the different organs, their contents in cholesterol are sufficiently distinct one from the other to constitute real chemical characteristics of these organs. For instance, the lung holds 2 grm. of cholesterol for 100 grm. of dry matter, the testicle 1.8, the kidney 1.2, the liver 0.7, the heart 0.4, the muscle 0.3. These figures are averages around which the real experimental figures group themselves. The individual divergences, though perceptible, are not very important. They are, at the utmost, 5 per cent for the lung, 6 per cent for the testicle, 10 per cent for the kidney. They may be more considerable and reach 20 per cent, and sometimes even more, for muscle.

3—Among different species, the content in cholesterol for homologous organs is of the same order of magnitude. For instance, you find

In the liver of the dog

0.7 grm. of cholesterol for 100 grm. of dry matter

In the liver of the rabbit

0.8 grm. of cholesterol for 100 grm. of dry matter

In the liver of the guinea pig

0.6 grm. of cholesterol for 100 grm. of dry matter

In the liver of the toad

0.8 grm. of cholesterol for 100 grm. of dry matter

One finds also, it is true, figures that differ much from these. For instance:

In the liver of the pigeon

1.2 grm. for 100 grm. of dry matter

In the liver of the frog

1.1 grm. for 100 grm. of dry matter

In the liver of the adder

1.3 grm. for 100 grm. of dry matter

When these discrepancies in figures occur, they are like a characteristic of species; a similar discrepancy then occurs for the other organs, and thus the classification of the latter by their content in cholesterol remains the same in the different species. Accordingly, in the researches of the French physiologists, A. Mayer and G. Schaeffer, from whose work we

borrow these data, we find the following order generally observed: lung, kidney, liver, muscle, decreasing in richness or cholesterol. One is entitled to say that the content of a tissue in cholesterol is for that tissue a real "constant," provided that one does not give the word "constant" a meaning as strict as in mathematical language.

THE FATTY ACIDS

Let us now turn to the fatty acids. For these acids, experiment proves that there is no really characteristic amount for each organ; the content in fatty acids of the liver, the kidney, the lung, the pancreas, the muscle, the heart, may be of the same order of magnitude; one finds, for instance, for the dog, uniformly 11 per cent or about that in each of the above-mentioned organs. The content of the organs in fatty acids, on the contrary, varies in a large proportion, according to the species, and thus the average content in fatty acids for all of the tissues constitutes a real characteristic of species. Lastly, the physiological circumstances, such as the kind of food, the sexual activity, etc., can have an appreciable influence. This is especially evident in birds, batrachians, and fishes, much more than among the mammals.

LIPIDIC PHOSPHORUS

We now come to "lipidic phosphorus," that is to say, that fraction of organic phosphorus one finds as lecithin, or a substance of similar constitution. Here is what the experiments of A. Mayer and G. Schaeffer, and our own, say about that question:

1—The amount of lipidic phosphorus in the organs, expressed in percentage of the dry matter, is, for a given organ of a given species, almost constant.

2—For a given species, the amounts of lipidic phosphorus are, in the various organs, very perceptibly different.

3—For different species, the amount of lipidic phosphorus in homologous organs is of the same order of magnitude. Some organs are very rich in lipidic phosphorus; in the spinal marrow of mammals one estimates about 15 per cent, in the brain about 1 per cent, in the suprarenal and in the hypophysis up to 0.8 per cent.

Other organs are very poor in that form of phosphorus. The muscle is typical, having a content of about 0.2 per cent. The spleen and the thymus are also poor in lipidic phosphorus. Others still have contents of lipidic phosphorus ranging in an intermediate zone, between 0.4 and 0.6 per cent, such are the liver, the kidney, the pancreas, the lung, and the heart. These numbers are calculated for 100 parts of dry matter. But if one calculates the quantities of lipidic phosphorus for the fresh matter in its normal state of hydration, the content in lipidic phosphorus appears as a very characteristic amount in the organs. The organs we have grouped in the third category acquire more individual indices in lipidic phosphorus —

0.10 for the lung
0.13 for the kidney
0.15 for the liver, etc

One might say that these indices could be used to define the tissues.

The facts I have just recalled in a very condensed summary were acquired about fifteen years ago, from a series of researches made by the two French physiologists I have already quoted, A. Mayer and G. Schaeffer. Some time later, I was able myself, with a few of my collaborators (Miles Gnoc, Rousseau, Crémieu, M. Allane) to gather on the same subject, and in quite an incidental way, a fair number of experimental data which, on the whole, agree with those published by our predecessors.

We have recently analyzed, with Mlle Crémieu, not isolated organs, but whole animals, chosen somewhat at random among the main divisions of the animal kingdom: a coelenterate like *Agartia parasitica*, a worm of the class Chaetopoda like *Nereis virens*, etc; a little fish like *Cyprin*, and a small mammal like the mouse. We found for their total content in lipidic phosphorus numbers hardly differing one from the other, and several about 200 mgm per 100 gm. of dry matter. The differences between the extreme numbers were certainly not of the order of magnitude one might have expected from the complete diversity of the organisms that had been considered. This is a phenomenon which must be something more than a fact of pure chance, the proof of a certain similitude of composition of all the living matter in that respect.

Now, let us turn to what the analysis of organs shows us about the lipids. Upon the whole Mayer and Schaeffer synthesized their thought and expressed the results of their experiments when they spoke of a "lipocytic constant" of tissues and of the existence of "lipocytic indices," among which the "cholesterol index" and the "lipidic phosphorus index" are the most evident. They went still farther. Calculating the ratios between quantities of fatty acids and cholesterol, they noticed that these quantities are for each sort of tissue in a precise constant ratio, and that these ratios vary with each tissue. They were thus enabled to speak of a "lipocytic coefficient" for tissues. For a dog, this ratio is 2.2 in the muscle, 6.8 in the liver, 10.5 in the kidney, 20 in the lung, etc. Thus, the idea that was the starting point of this lecture is justified in one respect. Let us now try to justify a second point. I have already told you we would choose therefor the study of the nucleic compounds.

NUCLEIC COMPOUNDS

Having succeeded in establishing, together with M. Allane, a method, simple in its principle, minute in its application, for the quantitative determination of the fraction of phosphorus which is in the shape of nucleoproteids, or nucleic phosphorus, as we say for short, we wondered whether there was for each tissue of each living species a content in nucleic phosphorus characteristic of each of them, and of a constancy sufficient to constitute a true index. We wondered whether there was an "index of nucleic phosphorus", as there is one of cholesterol and of lipidic phosphorus.

It is hardly necessary to emphasize the importance we were entitled to give to such an index. That nucleic phosphorus is the phosphorus of the essential constituents of the nucleus of the cell. Its value may represent a mode of expression of the nuclear mass, a mass for which numerical expressions are entirely lacking, or are liable to serious objections. This is what we found. For a stated animal, the values of nucleic phosphorus are extremely different for the various organs.

Here are the values we established for the organs of a horse (18 months) —

Organs	Nucleic P in mgm. per 100 grm.	
	Fresh matter	Dry matter
Thymus	249	1296
Pancreas	141.5	643
Spleen	92.3	390
Suprarenal	63.7	253
Liver	55.6	204
Testicle	47.8	356
Lung	37.2	204
Thyroid	36.9	139
Kidney	33.6	169
Heart	12.8	61
Brain	12.3	75
Muscle	6.1	25
Spinal marrow	6.1	20

The differences between these organs, from the point of view of their content in nucleic phosphorus, are of an order of magnitude such that the numbers which express the rate of nucleic phosphorus constitute real characteristics of these organs, indeed they are real indices. But, to be entitled to speak of indices, the same numbers must be found with sufficient regularity among the various individuals of each species. This is precisely what our experiments verify. Nevertheless, certain differences in the physiological state must not interfere. In that respect, I should like to give two typical examples, one of variation, the other, on the contrary, of stability, for the value of the indices of nucleic phosphorus.

First, the example of variation.

I shall take it in what happens at the beginning of life. A mammal that is just born has a certain total content of nucleic phosphorus, then, as it gradually grows, this content gets smaller and smaller, remains low for a time, then rises again, and rests after a while at a level which remains the normal one for a long time. It is, we may notice, exactly the reverse of the change observed with respect to lipidic phosphorus. Thus at the beginning of life, there are variations of a certain amplitude. We observed them very closely in the rat, with M. Allaire and Mlle. Rousseau.

And now the example of stability.

I shall take it in the researches, undertaken with the same collaborators, on the influence of deficiency of a vitamin, the lipo-soluble vitamin A, upon the chemical composition of animals. While a theoretical idea, which it is not the time to develop here, led us to suppose that this deficiency might cause a sensible fall of the nucleic phosphorus, experiment proved to us that it does not bring the loss of equilibrium of the organism in its content in nucleic

phosphorus. If there is a small diminution because of that deficiency, that diminution is unimportant (in the case of a mouse), and experiments made upon rats, which will soon be published, reduce to nothing the idea that there may be such a diminution. This is, I must say, one of the finest examples I have ever seen of the constancy of composition of living matter in thoroughly different physiological states, since one of them is accompanied with serious health disturbances followed by rapid death, while the other favours a normal growth and evolution.

The amounts of nucleic phosphorus characterize not only the various organs of a stated species, with different species one finds for homologous organs, numbers which are not the same, of course, but which oscillate between very narrow limits. We have analyzed, in recent years, the organs of a fair number of animals. The impression left by careful study is that each organ is characterized by a certain content in nucleic phosphorus. The spleen is rich in nucleic phosphorus, with an index of 300 to 400 (that is to say 300 to 400 mgm of nucleic phosphorus for 100 grm of dry spleen), the liver is not so rich, with an index of about 200, the kidney comes next, with an index of about 150, the brain is poor, with an index of about 70, the heart also, with an index of 55, and the muscle still poorer, with an index of 30. Of course, I am simplifying the facts and am not giving you the details of variations around these average numbers, variations whose causes can be discerned in many a circumstance.

Yet, this is not all. If the study of the quantitative ratios between the constituents of the cellular lipids gives us interesting views on the question, in the same way that of the quantitative ratios between the various phosphorus compounds of cells brings us to some remarks capable of strengthening the notion of cellular chemical equilibria.

In the course of the researches made during the last few years, we have determined the quantitative ratios existing between the different forms of phosphorus and the total phosphorus, and between the different forms of phosphorus themselves, in the organs of various animal species under various physiological circumstances. The ratios offering the greatest interest are the following —

but physical signs give little help in framing the individual prognosis which the patient seeks. This can only be obtained by a careful estimate of the functional efficiency of the organ concerned. In the case of the heart this resolves itself into an estimation of the efficiency of the ventricular muscle, and many means have been devised to this end. Some of these are based upon the reaction of the heart, or of the blood pressure to muscular exertion, others upon certain abnormalities demonstrable in the electrocardiogram. None of these are altogether reliable, and then findings are frequently belied by the subsequent history of the patient. The only test upon which reliance can be placed is the clinical test of the response of the patient to ordinary muscular exertion, *ie*, the manner in which he is able to perform his usual daily activities as indicated by the symptoms and sensations to which then performance gives rise. A patient whose myocardium is becoming impaired will recognize a limitation of a definite kind in his capacity for effort long before examination will reveal anything amiss. This method has the further advantage that it is individual, the patient being compared with his own previous normal. The so-called "exercise tolerance" tests have the disadvantage that they lack the essential factor of control. The patient is tested against a standard to which his relation in the days of his normal health is unknown. No reaction which a patient shows in response to muscular exertion can ever be regarded as unimportant, but the real question is, how the reaction at the time of examination compares with a similar reaction in health. In the case of the clinical test, the patient can supply this information with great accuracy.

Much ingenuity has been exercised in the classification of murmurs, especially systolic murmurs, and various conclusions have been based upon these classifications. Thus, systolic murmurs have been divided into those which follow the first sound, those which replace it, and those which occur concurrently with it. Again, they have been classified as blowing, rough or musical according to their quality. Whatever descriptive or diagnostic value such classification may possess, it is entirely inadequate as a means of prognostic assessment. The only factor which is of any importance for this purpose is the capacity of the ventricular

muscle to maintain an adequate circulation. No consistent relation between this capacity and any of the variations which the murmur may show has ever been demonstrated.

Mackenzie classified cardiac murmurs into three groups—the physiological, the functional, and the organic. This classification was introduced as a reaction against the then current view that all murmurs were necessarily of serious import.

The physiological murmur occurs in conditions of perfect health, in which the heart responds normally to every demand made upon it. If from accident or other cause death occurs, the heart shows no abnormality on post mortem examination. Postural systolic murmurs and respiratory murmurs belong to this group.

Functional murmurs are not associated with any organic change in the valve. They usually occur in association with a degree of dilatation of the heart, and are presumably due to relaxation of the mitral ring. They are accompanied with some limitation of the response to effort. Physiological and functional murmurs are always systolic in time. Functional diastolic murmurs have been described, but their occurrence is so rare as to be negligible.

Organic murmurs are associated with secondary changes in the valve, generally of a fibrotic or degenerative kind. The distinction between a functional and an organic murmur is not always possible. In doubtful cases, the history is of the highest importance. A rough or musical quality is perhaps more common in organic murmurs. The importance of an organic murmur is that it indicates that the valve is, or has been, the seat of disease, and raises the question as to whether other and more vital parts of the heart may not have been invaded also. To assess the value of any murmur, it must be considered from two points of view, *viz*, the condition of the orifice, and the condition of the myocardium.

APPLICATION

Diastolic Murmurs—Diastolic murmurs are nearly always organic in origin, and indicate lesions of valves which embarrass the heart and tend to the production of heart failure. A murmur occurring during diastole means that one of two conditions is present, either mitral stenosis or aortic regurgitation.

Murmurs of mitral stenosis The earliest

sign of mitral stenosis is the occurrence of a short murmur immediately preceding the first sound. At first this murmur is variable, but soon becomes persistent. Occasionally, the first indication of the condition is to be found in a reduplication of the second sound. As the stenosis advances a short diastolic murmur is added, which gradually increases in length as the contraction of the valve orifice proceeds, until it occupies the whole of the diastolic pause. Should fibrillation of the auricle supervene, the presystolic element of the murmur disappears, leaving only the diastolic murmur. In cases where the onset of the presystolic murmur has been observed a fair idea of the progress of the condition can be obtained by observing the rate at which these changes occur. If the case is seen at a later stage, a history can often be obtained of an attack of rheumatic fever which presumably set up the valve mischief, and the rate of progress assessed in a similar manner. The stenosis being due to cicatricial contraction, the presystolic murmur is never heard during the initial illness, but follows it after a considerable interval of time. Exact evidence of the rate at which the murmurs of mitral stenosis develop is scanty, but from a small series of cases in which this condition has been observed to follow rheumatic fever, a period of two to five years elapsed between the attack and the appearance of the presystolic murmur.

In one case of rheumatic endocarditis, in which the heart was examined at four day intervals over a period of nearly two years, the first appearance of the murmur of endocarditis was noted on the ninth day of the illness (January 12, 1922). An aortic regurgitant murmur was noted on February 7, 1923. A reduplication of the second sound at the apex suggestive of mitral stenosis appeared July 27, 1923. Death occurred from erysipelas and septic pneumonia November 1, 1923, no presystolic murmur having developed up to that time. Post mortem examination showed the typical appearance of old-standing endocarditis: narrowing of the mitral orifice, the cusps of the valve being thickened, fibrous, shrunken, and fused with one another at the adjacent margins. The aortic valve was incompetent, the cusps being thickened at their margins and slightly shrivelled.

The presence of a presystolic murmur is in itself a useful starting point for assessing the progress of the condition. Thus, mitral stenosis in young people, accompanied by presystolic and diastolic murmurs, is a very grave condition, whereas in a middle-aged patient, with a history of rheumatic fever in childhood, and only a presystolic murmur present, the rate of stenosis is obviously slow and may even be stationary. In cases which are progressive there are invariably factors present other than the valve change. Rheumatic infection affects all the tissues of the heart and usually produces a degree of impairment of the ventricular muscle. It is upon this factor that the prognosis in the main depends. Evidence of affection of the conducting system—or genetic system, as Mackenzie more correctly called it,—is to be found in the presence of the mid-diastolic murmur. This murmur is separated from both the first and second sounds. Mackenzie demonstrated that it coincided in time with the auricular systole, its occurrence in mid-diastole being due to the fact that the systole of the auricle was separated by a pause from that of the ventricle. The presence of a mid-diastolic murmur, therefore, is evidence not only of the presence of mitral stenosis, but also of a degree of heart-block. There are thus three factors of importance in the assessment of the murmurs of mitral stenosis: (1) the nature of the murmur present, as indicating the condition of the orifice, (2) the rapidity with which the sequence of murmurs is developing, and (3) the capacity of the heart muscle to carry on an efficient circulation, in spite of the obstruction caused by the valvular defect. If fibrillation has occurred, an additional embarrassment is thrown on the ventricular muscle, and in these conditions the prognosis must be based on the third factor, and upon a consideration of the response to treatment. Patients with mitral lesions rarely die in their first attack of heart-failure, however severe it may be, and no adequate prognosis in such cases is possible until the response to treatment has been carefully observed. A considerable proportion of the subjects of mitral stenosis do not die from heart-failure at all—according to Cabot about one-half—but from some intercurrent affection, or from malignant endocarditis.

Murmurs of aortic regurgitation Aortic regurgitation is, as a rule, a very serious condition, though this is not invariably the case. Many elderly people showing the characteristic murmurs of aortic regurgitation lead healthy and even strenuous lives, while others showing identical murmurs pass rapidly into a condition of extreme heart-failure. No valid prognosis can thus be based upon the mere presence of a regurgitant murmur. Nor does the amount of regurgitation appear to be a factor of any particular significance. Even if it were, the possibility of gauging the extent of the regurgitation clinically is an exceedingly doubtful one. The loudness of the diastolic murmur, its length, the presence or absence of the second sound, have been suggested as possible indications of the extent of the regurgitation. The difference between the systolic and diastolic arterial pressure, i.e., the pulse pressure, has been utilized for the same purpose. The main difficulty with such indications is that they are not always consistent in the same patient. Thus, a long diastolic murmur, suggestive of a large leak, may be associated with a moderate pulse-pressure. Apart from the fact that there is no reliable method by which the amount of regurgitation can be estimated clinically, post-mortem evidence gives no support to the view that the extent of the damage to the valve necessarily corresponds with the degree of heart-failure observed during life.

The condition of the pulse, though of little help as an index of the degree of regurgitation, is, nevertheless, a factor of considerable prognostic importance. As a rule, when the systolic pressure is very high and the diastolic pressure very low (190-60), other evidence of heart-failure is present. A moderate difference between the systolic and diastolic pressures (180-90) is quite consistent with an efficient heart while in some cases, the difference is equal to the normal. In these last instances the pulse has little of a collapsing character, though, as Vaquez points out, the abrupt rise of pressure with each pulse beat is apt to convey to the finger an impression of a collapsing quality. When aortic regurgitation is arterial in origin, the diastolic pressure may be consistently high. The pulse condition, therefore, must be considered in conjunction with

the other symptoms present. Among these other symptoms the size of the heart is an important guide. In the cases who lead vigorous lives, free from any suggestion of heart failure, the left ventricle is never more than slightly hypertrophied, the murmurs being dependent upon changes which are, in the main, limited to the valves. In more serious conditions, all degrees of hypertrophy may be present.

The most important prognostic factor in this, as in all other cardiac conditions, is the state of the ventricular muscle, as shown by the response of the patient to ordinary effort. Contrary to what obtains in mitral disease, the heart failure of aortic regurgitation is less susceptible to treatment, and recovery is less frequent and less pronounced than in heart failure resulting from any other condition. Even when heart failure is extreme in mitral stenosis with auricular fibrillation, a good recovery may often occur, but in aortic disease with auricular fibrillation the heart failure is usually steadily progressive, and it is seldom possible to check its progress.

Systolic Murmurs—The assessment of systolic murmurs is conducted on entirely the same principle as has been indicated in dealing with diastolic murmurs. Systolic murmurs, however, present certain difficulties of their own, owing largely to the frequency with which they are functional or physiological in origin. In the case of a systolic murmur arising in the course of an acute affection, the distinction between a functional and organic murmur may be very difficult, and, particularly in the case of rheumatic fever, the gravest issues may depend upon its proper interpretation.

Aortic stenosis In the case of a systolic murmur discovered on ordinary examination, the important point to define is whether or not it is associated with signs indicating that the ventricle is being hampered in its work. The murmur of aortic stenosis is a case in point. A systolic murmur at the base of the heart is in the majority of instances functional or physiological in origin, and is not associated with any evidence of inefficiency of the ventricular muscle. If the aortic orifice is narrowed, the response to effort will be limited and the left ventricle enlarged. A pulse tracing may show the anacrotic pulse sometimes associated with this condition.

Aortic stenosis occurring by itself is an exceedingly rare condition

Mitral incompetence Mitral incompetence by itself probably never constitutes a serious embarrassment to the heart. The recent work of Cabot would appear to indicate that mitral regurgitation is the rarest of all valvular affections, and indeed may be said hardly to exist at all as a pathological entity. How far it exists as a clinical entity is perhaps another proposition, for there does not seem to be any certain means of estimating after death what the competence of the valve may have been during life. While pathological evidence of organic mitral insufficiency may be scanty, functional mitral regurgitation due to relaxation of the mitral ring may be of more frequent occurrence. The question is, however, of little practical importance, for in estimating the significance of systolic murmurs at the mitral valve it makes little difference whether or not regurgitation is present, provided that the heart muscle shows no signs of inefficiency.

A systolic murmur discovered accidentally in an individual who is otherwise in perfect health, and who shows no limitation in his capacity for effort, may be completely disregarded. If it occurs in association with signs indicating a limitation of response to muscular effort, especially if the limitation be that of breathlessness or pain in the chest, the prognosis should be based upon these signs, and not on the murmur, the presence or absence of which does not affect the issue to any degree.

Systolic murmurs arising in the course of acute illness In the course of acute illness a systolic murmur is prone to develop, especially in young subjects, and is frequently associated with a degree of dilatation of the heart. The murmur in the majority of these cases is functional in origin, and usually disappears when convalescence is established. A functional murmur arising in such circumstances is unaccompanied by any signs of deterioration in the patient's general condition. The course of the illness is unaffected, the rate of the pulse remains unaltered, and the patient progresses normally towards convalescence. Coombs lays stress on the fact that the organic murmur is audible in all areas and that the heart is not as a rule enlarged. If a murmur is caused by a lesion which embarrasses the heart in its

work, the chamber affected will alter in form, either by dilating or by becoming hypertrophied. The absence, then, of any alteration in the size of the heart is evidence that there is little embarrassment. The presence of the general characteristics of organic murmurs, such as postural variation, etc., are important confirmatory signs. The distinction between functional and endocardial murmurs is often impossible during the acute phase of an illness. It is necessary as a rule to suspend judgment until the subsidence of the acute attack, when the points of distinction become more evident. This is particularly so in the case of rheumatic fever. In this condition, as in other acute affections, a functional systolic murmur is frequently present. On the other hand, the liability of the heart to rheumatic infection suggests a possible endocardial origin for any murmur which may develop. It is obviously of the highest importance that these two conditions should be clearly differentiated. There is no one criterion which is applicable to all cases. Each must be judged on its own merits, but there are certain general considerations which help towards a correct decision.

The mode of onset of the murmur, and the conditions associated with its development, provide the most reliable indications for this purpose. The murmur of endocarditis usually begins with a blurring of the first sound in the mitral area, and is associated with persistent rapidity of the pulse and a decline, or at least a want of improvement, in the condition of the patient. The blurred first sound soon gives place to a definite murmur and is associated, as a rule, with perceptible dilatation of the heart. Dilatation of the heart may occur in conjunction with a murmur which is purely functional, but these two signs, plus persistent rapidity of the pulse and want of improvement in the general condition, are highly suggestive of the onset of endocarditis. Should rheumatic nodules be present, the diagnosis is practically certain. Endocarditis, which is more prone to occur in young subjects, generally makes its appearance during the first fortnight of rheumatic fever. The murmur itself may not appear for a considerable time, and the heart should be carefully watched for its occurrence until well after the joint symptoms have subsided.

AORTIC INSUFFICIENCY DUE TO RUPTURE BY STRAIN OF A NORMAL AORTIC VALVE*

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IN a hospital experience of twenty-five years I had never seen a case of aortic insufficiency due to rupture of an aortic valve and, therefore, considered the following case report worth recording.

After a brief outline of the case, I shall discuss the incidence of this comparatively rare accident, classify the cases, and then discuss at some length the pathogenesis, pathology and symptomatology of the group.

CASE REPORT

H B, aet 33 chauffeur admitted to the Montreal General Hospital on November 6, 1924, complaining of pain over the heart, palpitation, shortness of breath, cough and swelling of the feet.

Family History—Negative, except that the father died at 53 from "heart disease."

Personal History—The patient denied rheumatic fever, chorea and syphilis. He had been married one year, his wife had had one full term child and no miscarriages. He smoked to excess and used alcohol moderately. He had enjoyed perfect health previously.

Present Illness began on October 6, 1924, when one cold morning, after cranking his car for two minutes, he was suddenly seized with a sharp pain in the left upper chest and especially in the epigastrium, but with no radiation to the arm, he immediately became short of breath and began to cough. He remained at work for some hours, when he stopped on account of the pain in the epigastrium and dyspnea. Subsequently he noted a "thrill" in the left upper chest. He remained in bed two weeks and then returned to work, but was forced to give up again on November 1, 1924 as his symptoms had become very acute. The pain then radiated down the left arm and even to the left leg. He became very orthopneic and vomited constantly. Oedema of the feet also appeared.

Physical examination revealed a large, stout, French Canadian male, in great respiratory distress. The colour of the face was sallow, but cyanosis of the lips, ears and finger tips was present. The thorax was very large. There was impairment of the note at both bases with suppression of the breath sounds and the presence of many moist râles. Heart. There was slight bulging of the præcordium and a widespread heaving impulse visible over the entire left chest, the point of maximum intensity of which was in the fifth interspace, 12 cm. from the midsternum. On palpation over the left base, a very intense vibratory thrill could be felt, perceptible throughout the entire cardiac cycle, but with definite systolic and diastolic intensification. The relative cardiac dullness began in the second interspace and was much increased to the right (5 cm.), but more particularly to the left (15 cm.) of the midsternal line. On auscultation, the heart sounds were replaced by murmurs, whose maximum intensity

was at the third and fourth left interspaces close to the sternum. The systolic murmur was rough and vibratory and filled the entire systolic period, completely obliterating the first sound, though very widely distributed it was of maximum intensity in the second right interspace. The diastolic murmur was of higher pitch, shorter and more musical, and, though propagated to the apex and into the vessels of the neck, was of maximum intensity over the third left interspace close to the sternum. No second sound could be heard. The pulse was of the typical water hammer character, and was rapid, with a palpable vibratory thrill. The sphygmomanometer revealed a systolic blood pressure of 130 mm., and a diastolic that varied from 40 to zero. There was a marked pulsation of the carotid, brachial and femoral arteries, as well as a definite capillary pulse. The electrocardiogram showed an inversion of the "T wave" in all leads. Fluoroscopic examination revealed an enormous heart with no aneurysm. The liver was enlarged and tender. While there was no ascites there was oedema of the legs. In the urine there was a constant albuminuria, but no cylindruria. The blood count was normal, (75 per cent hemoglobin, red blood cells 5,080,000), except for an occasional leucocytosis, (7,500 to 11,000). Two blood Wassermann tests were negative.

The diagnosis favoured was, either a congenital heart lesion with cardiac decompensation, or an acquired aortic insufficiency with the sudden onset of cardiac decompensation due to strain, though the possibility of a rupture of an aortic cusp was suggested by my resident physician, Dr E S Mills, and was seriously considered.

The course was practically a downhill one, in spite of short periods of apparent improvement from the bed rest and digitalis. However, the cardiac distress, dyspnea and oedema increased, and there developed, first, signs of infarction of both lungs, and finally a thrombosis of the posterior tibial vein. Death occurred on January 1st, from progressive cardiac decompensation, practically twelve weeks after the severe muscular effort.

Post mortem—There were, in addition to marked oedema of the lower extremities, dense adhesions about the right lung, with an old tuberculous cavity in the right apex and a scar of the left apex, recent infarcts in the right lower as well as in the left upper and left lower lobes, acute fibrinous pleurisy over the infarcted areas. The common attachment of the anterior and medial (left posterior) cusps of the aortic valve was torn away from the aortic wall, due to a transverse tear in the intima, five eighths of an inch in length, allowing the cusps to become very lax, (see photographs). The mitral valve showed slight thickening. There was a fairly extensive sclerosis in the sinus of Valsalva, and a still earlier process in the root and arch of the aorta as well as the descending aorta. The heart weighed 610 grm., and showed marked hypertrophy with dilatation of the left ventricle and great dilatation of the right. The liver, spleen and kidneys revealed marked passive congestion. Microscopically, the aortic cusp was normal. The vasa vasorum of the aorta showed no evidence of syphilis.

* Read before the Association of American Physicians, May 6, 1925



FIG 1—Rupture of the Aortic Valve A—rupture of valve B—tear in aorta.
(Montreal General Hospital A-25-1)



FIG 2—Rupture of the Aortic Valve A—rupture of valve B—tear in aorta.
(Montreal General Hospital A-25-1)

INCIDENCE

Rupture of the healthy mitral and tricuspid valves due to injury from external causes has been known to pathologists since the time of Marat and Corvisart,¹ but the earliest recorded case of rupture of the aortic valve is one by Plenderleath²³ in the *London Medical Gazette* of 1820. Since then some hundred odd cases have appeared in the world's medical literature

A prolonged search through various *referate*, as well as the *Index Medicus*, the *Surgeon-General's Catalogue*, and the *Quarterly Cumulative Index*, reveals a surprising silence on the subject in many of the text-books of medicine and even in the monographs on heart disease. However, as the writer has learnt to expect, Osler² in his *Principles and Practice of Medicine* mentions rupture as a very rare cause for aortic insufficiency, and some of the older writers, such as C. J. B. Williams³ (1839), Thomas Peacock⁴ (1873), Dacosta⁵ (1874), Hilton Fagge⁶ (1877), G. W. Balfour⁷ (1898), Stern⁸ (1900) and Kuelbs⁹ (1909), also describe it in more or less detail. In the medical journals and theses, Quain,³³ Peacock,⁴⁴ Duroziez,⁶⁸ Barié,⁷⁰ Dreyfus⁸⁶ and Dufour,⁸⁷ have published cases of their own and collected all available reports from the literature. Dreyfus was able to find only forty-six cases up to the year 1896. The writer set himself the thankless task of combing the literature from 1830 to 1925 inclusive and succeeded in finding but 112 cases, all of which were not proven, however. The writer's case makes 113.

Cases of so-called "traumatic endocarditis" without valve rupture (Alvarenga,¹⁰ Gerhardt,¹¹ Mayr,¹² Riedinger,¹³ Leyden,¹⁴ Duems,¹⁵ Rumpf,¹⁶ Dieckman¹⁷) have been excluded and, of course, cases of proven ulcerative endocarditis (Williams,¹⁸ Packard,¹⁹ Peacock,²⁰ Salter,²¹ Orlebar,²² Rosenberg,²³ Byrom Bramwell²⁴), as this paper is concerned only with rupture of a healthy or diseased aortic valve from muscular effort or trauma.

CLASSIFICATION

There are two main groups to be considered first, those due to muscular effort or *strain*, and, second, those due to *traumatism*. A third, small, group consists of cases in which the exciting factor is not stated.

The first group comprises sixty cases of which only thirty were proved by autopsy (Plenderleath²³ Henderson,²⁷ Corrigan²⁸ (case 2), Latham-Bence-Jones,³² Quain³³ (case 1), Quain-Jones,³⁴ Peacock³⁷ (case 1), Peacock⁴¹ (case 2), Meschede,⁴⁷ Foster⁴⁸ (case 1), Simpson,⁵² Williams,⁵³ Foster⁵⁷ (case 4), Pepper,⁵⁸ Burney-Yco⁵⁹ (case 1), Frew-Finlayson,⁶³ Greenhow,⁶⁶ Lindman,⁶⁷ Lewis,⁷⁷ Leyden⁷⁸ (case 1), Fraentzel,⁷⁹ Tretzel,⁸¹ Hektoen,⁸² Leyden⁸³ (case 2),

Jamieson,⁵⁰ Broadbent,¹⁰⁰ Heller,¹¹⁴ Anderson¹¹⁹ (case 2), Hoffmann¹²⁹ (case 4), Howard¹³⁷) The other thirty cases, though clinically probable cannot be considered as proven in the absence of a post-mortem record in twenty-nine (Aran,³¹ Quain,³⁵ (case 3), Rawson,³⁶ Markham³⁹ (endocarditis?), O'Neil,⁴⁰ Peacock⁴⁴ (case 3), Peacock⁴⁵ (case 4), Foster⁴⁹ (case 2), Allbutt⁵⁴ (case 1), Burney-Yeo⁶⁰ (case 2), Peter⁶¹ (case 1), Peter⁶² (case 2), Oiton-M'Aldowie,⁶⁷ Zohrab,⁷³ Cantley,⁸⁴ Launois,⁸⁸ Debove,⁹⁸ Ostwalt,⁹⁹ Horton-Smith,¹⁰² Dupuis¹⁰³ (case 1), Taylor,¹⁰⁴ Shaw,¹⁰⁵ Jorns,¹⁰⁸ Ercklentz,¹¹¹ Olivei,¹¹² Anderson¹¹⁸ (case 1), Allbutt¹²⁴ (case 3), Wolvins,¹³⁵ Emanuel-Roncoroni¹³⁶) Markham's case,³⁹ which was the only one in this group which came to autopsy, was in my opinion one of aortic insufficiency, due to an endocarditis of the aortic valve and not to rupture. Others besides Markham have made a similar mistake. Thus, no less a clinician than Gerhardt¹¹ reported a case of supposed rupture of the aortic valves, which later Sinnhuber¹¹⁵ stated was shown at autopsy to be due to a recurring endocarditis of the aortic valve and not to rupture. It is, therefore, wise to regard no case as acceptable without an autopsy record.

In the second group there are forty-seven cases recorded, but only fourteen were proved by autopsy (Bouillaud - Beigeon,³⁰ Wilks,⁴⁶ Hayden,⁵⁰ Finnell,⁵¹ Foster⁵⁰ (case 3), Duroziez⁶⁸ (case 1), Barié-Potam,⁷² (case 3), Madei,⁷⁶ Biggs,⁸⁰ Strassmann,¹⁰⁷ Schmidt,¹⁰⁹ Tranquilli-Deganello,¹²⁰ (case 2), Stemitz,¹²⁵ Meyer¹³⁴) The Bouillaud-Tallall²⁹ case came to autopsy, but, in my opinion, the perforation of the valve was not necessarily traumatic. In the other thirty-two, no autopsy was obtained after death, or the patients were still alive at the time the case was recorded (Leioy,⁶⁴ Duroziez⁶⁹ (case 12), Barié⁷⁰ (case 1), Barié⁷¹ (case 2), Barié⁷³ (case 4), Heidenham,⁸⁵ Dieyfus,⁸⁶ Dufou,⁸⁷ Bernstein⁹⁰ (case 1), Bernstein⁹¹ (case 2), Bernstein⁹² (case 3), Lembke,⁹³ Schneider,⁹⁴ Guder,⁹⁵ Kantorowitz⁹⁶ (case 1), Kantorowitz⁹⁷ (case 2), Castiaux and Laugier,¹⁰¹ Calwell-Campbell,¹⁰⁶ Cahn,¹¹⁰ Sinnhuber¹¹⁵ (case 1), Sinnhuber¹¹⁶ (case 2), Sinnhuber¹¹⁷ (case 3), Schlecht¹²¹ (case 3), Schlecht¹²² (case 4), Zulzer,¹²³ Hoffmann¹²⁶ (case 1), Hoffmann¹²⁷ (case 2), Hoffmann¹²⁸ (case 3), Bensaude-Monod,¹³⁰ Cramer,¹³¹

Brossard-Heitz¹³² (case 1), Brossard-Heitz¹³³ (case 2))

In the third, small, group of six cases the exciting cause was not stated, though all revealed at post-mortem a rupture of one or more of the aortic valves with a resulting aortic insufficiency, (Corrigan²⁶ (case 1), Rokitsansky³⁸ (case 39), Bennett,⁴² Ellis,⁴³ Humphrey,⁷⁴ Fisher¹¹³) However, Fisher's case is so incomplete as to be unacceptable.

To summarize, we have records of 113 cases of rupture of the aortic valve, of which forty-nine were proven by autopsy. Of the two main groups, the "strain" group is the larger, comprising altogether thirty proven and thirty unproven cases compared with fourteen proven and thirty-three unproven cases in the traumatic group. In five acceptable cases the cause for the rupture was not stated.

PREDISPOSING FACTORS

Country and race. Among the "strain" group, sixteen proven and seventeen doubtful cases were reported from Great Britain, seven doubtful from France, eight proven and three doubtful from Germany, one doubtful case each from Italy and Holland, three proven cases from America, two proven and one doubtful case from Canada, and one proven case from Australia. As may be seen, therefore, by far the great majority of the proven and doubtful cases were reported from Great Britain.

In rather marked contrast is the geographical incidence of the "traumatic group" only four proven and one doubtful case from Great Britain, two proven cases from America, and one from Italy, while from France three proven and eleven unproven cases, and from Germany five proven and twenty-one unproven, are recorded. In this group, therefore, Germany leads, with France second. In the third group, four cases (three proven) came from Britain, and one each from America⁴³ and Austria.³⁸

Sex. Of the forty-nine proven cases of the three groups, the overwhelming majority (98 per cent) were males. In fact, only one female is listed among the "strain" cases and that doubtful, while among the traumatic cases, there were but three females, two of which were not proven cases. Evidently, therefore, the male

sex is more exposed to rupture of the aortic valve than the female.

Age Of the "strain" group the age was stated in twenty-six of the proven and in twenty-six of the doubtful cases. In the former it ranged between 20 and 60 years with a mean of 37.2 years, in the latter from 20 to 68 years, with a mean of 37.4 years. The most susceptible decades were the fourth and fifth in both sub-groups. In those of the "traumatic" group, in which the age was stated, the range varied from 19 to 85 years in the proven cases, a mean of 45.6 years, while in the unproven group the variation was less marked (10 to 60) years, with a mean of 35 years. The most susceptible decades here also were the fourth and fifth. In short, the point of interest is that in the strain group the mean age was 37.2 years, in contrast to a slightly higher mean age for the traumatic group of 45.6 years.

Occupation In the strain group of the thirty proven cases, the occupation is mentioned in twenty-seven, of which all but five (physician, apothecary, cook, clerk, and bar-tender) were exposed to constant or occasional muscular effort in their daily routine, for example, five were day-labourers, two dock-labourers, one brakeman, one butcher, one chauffeur, etc. In the unproven cases, the occupation was mentioned in twenty-nine, and in only six was the occupation of the non-laborious variety, of the six latter, the most interesting case occurred in a young pregnant mother during the act of labour. Among the arduous occupations are also mentioned, two day-labourers, two farmers, a ship-wright, a carpenter, a smuggler, a poacher, a bricklayer, etc. In short, in this entire group, 81 per cent of the cases occurred in occupations which exposed the patient to great muscular effort.

In the traumatic group, among the fourteen proven cases, the occupation is not mentioned in four, in the other ten cases (80 per cent), their occupations exposed them to injury. Thus, two cases were carters, two labourers, one soldier, one ship's-cook, one jockey, one coachman, etc. In these occupations, four sustained a fall to the ground from various heights, three were kicked by a horse, two received a blow on the chest from a fist or a piece of iron, and one was squeezed between a post and a cart-wheel.

In the unproven sub-group, there was the same variety of occupation, though in the great majority it was of the arduous type. Among the twenty-eight cases whose occupation is given there were four labourers, four soldiers, one miner, one sailor, one locksmith, one stonemason, etc. Here by far the commonest cause for injury was a fall (sixteen cases) and next in order of frequency, a blow from a blunt instrument (ten cases), a not infrequent cause was a crushing injury to the chest wall (five cases).

Past medical history The patients' history, as to alcoholic excess, syphilis, rheumatic fever, chorea or tonsillitis, and previous cardiac symptoms, is of course of great importance in determining a possible *locus minoris resistentiæ*. This question will, therefore, be discussed before taking up the more accurate pathological criteria.

In the strain group, among the thirty proven cases, alcoholic excess is admitted in three cases only, denied in three, and not mentioned in the remaining twenty-four patients. In the doubtful cases, alcoholic excess was reported in four, absent in two, and not mentioned in twenty-four.

In the traumatic group the histories are more incomplete, even in the proven cases, but an abuse of alcohol was given in three cases before, and in one case after the accident, in ten histories no mention is made of alcohol. Of the thirty-three unproven cases, no one admitted to excess of alcohol, one denied it, and in the thirty-two other reports, no mention is made of it.

In the third main group which consists of five cases, in which the exciting factor is not stated, alcohol is not mentioned. In short, neither in the strain nor traumatic group does alcoholic excess play an important rôle.

In the strain cases which were proven, venereal disease was admitted only in the Frew-Finlayson case,⁹⁹ who had a chancre at 18 years of age, but without rash, in seven other cases it is specifically denied, and in twenty-two it is not mentioned in the history. In the unproven cases, syphilis appears five times in their records, (Zohrab,⁷⁵ Horton-Smith,¹⁰² Dupuis,¹⁰³ Taylor,¹⁰⁴ Emanuel-Roncoroni¹³⁶), though at the time of the accident the blood Wassermann was negative in one patient, in four others venereal

disease is denied, while in twenty-four histories no mention is found. Syphilis, therefore, in the strain cases does not appear as prominently as one might expect from the well-known predilection of syphilis for the aortic valve

In the traumatic group, among the fourteen proven cases, there is no case of known lues, in three it is denied and in eleven others no mention is made of it. Among the thirty-three unproven cases, one admitted to gonorrhœa (Sinnhuber¹¹⁷ (case 3)), eight denied venereal disease and in twenty-four no mention is found.

In the third main group of five cases, venereal disease is not mentioned.

Rheumatism, chorea and tonsillitis, which are so important in the etiology of endocarditis, were present in five cases, negative in eleven, and not mentioned in fourteen of the strain group proven by autopsy. Arteriosclerosis existed in one case⁷⁹ of this group and had no doubt weakened the valve. Pulmonary tuberculosis, malaria, and possibly, a chronic infection from chronic eczematous ulcers of the legs occurred in each of three cases, and may have had a predisposing influence.

Among the thirty unproven cases in the strain group, rheumatic fever was present twice and chorea once, while in thirteen cases rheumatism is denied, and in fourteen others it is not mentioned. There was, however, a history of malaria twice, sepsis twice, pneumonia twice and influenza once, diseases which might have lowered the resistance of the aortic and valvular tissues. Hence in only seven of the entire group of 60 cases was there presumably a previous rheumatic endocarditis.

In the traumatic group, even among the proven cases, there was no case with a history of the rheumatic cycle, in three it was denied and in eleven no mention is made of it. One case (Tianquilli-Deganello¹²⁰) had furunculosis five years before the accident, and so, possibly, septicæmia. Of the thirty-three unproven cases one⁸⁶ had rheumatism since the accident, two others^{37 122} before the accident, and one⁹⁵ had rheumatic purpura, in fourteen others the disease is denied, while in fourteen histories no mention is made of it. Hence, in the traumatic group of forty-seven patients, only four had, possibly, an aortic valve damaged by a previous attack of rheumatism. Two women^{29 86} had repeated pregnancies, while two males had a pre-

vious malaria,^{69 117} one measles and influenza⁸⁶ and one influenza alone,⁸⁷ while one patient had an active tuberculosis¹²³ and another was in the midst of a pneumonia,¹²⁸ when he fell out of bed.

In the third main group only one patient admitted to chorea.⁴³

Previous heart symptoms. Symptoms suggestive of a pre-existing valvular disease were present in only two cases^{58 79} of the strain group proven by autopsy, in eleven others they were denied, while in seventeen of this group no mention is made of their existence. Presumably, therefore, though not conclusively, in only two cases did a valvular defect of any degree exist prior to the strain. Among the thirty unproven cases of this group there was a history of previous cardiac symptoms in three^{75 84 103} of the twenty in which this point is mentioned. Again, but a small minority had pre-existing heart disease, though, of course, only an autopsy would corroborate this belief.

Among the fourteen proven cases of the traumatic group in five it is stated previous heart symptoms were present, while in the other nine cases no mention is made of the previous state of the cardiac compensation. In the thirty-three unproven cases twenty-one definitely denied them, and in twelve no mention is made of them in the scanty case reports.

In the third main group previous heart symptoms are not mentioned.

MORBID ANATOMY

First, as to the cusp affected. Because of the great variation in the anatomical nomenclature for the aortic valve we had great difficulty at times in deciding which of the three aortic cusps was the one ruptured. The anterior aortic cusp is usually called the "anterior," sometimes the "septal" or "segment of closure", the right posterior cusp of Gray's Anatomy is sometimes called the "posterior" and sometimes the "mitral", the left posterior aortic cusp is frequently spoken of as the "middle" cusp. We have reduced all these terms to "anterior," "right posterior" and "left posterior" cusps. It is important to remember that from just above the anterior cusp the right coronary artery arises, and

from above the left posterior the left coronary arises

While usually only one cusp is torn, sometimes two, and, rarely, three are affected. In the strain group, only one cusp was affected in eighteen cases, two in ten, and all three in two cases.^{57 78} When only one cusp was involved, it was the anterior in seven cases, the right posterior in four, and the left posterior in two, in five other post-mortems the ruptured cusp is not specified. When two cusps were affected, it was the anterior and right posterior in two, the anterior and left posterior in one, and the right and left posterior cusps in two, in five other protocols the two cusps affected are not mentioned.

In the traumatic group, which comprised but fourteen cases, only one cusp was involved in ten, and two cusps were affected in four. Of the single cusp cases, in five protocols the exact one is not specified, while in two it was the anterior, in two the right posterior, and in one the left posterior. When two of the cusps were involved it was the anterior and right posterior in two, and the right and left posterior in two. There was no example of traumatic tear of all three cusps.

In the third small group of cases in which no exciting factor was stated, all five came to autopsy, of these the left posterior cusp was alone affected in two, while both the anterior and left posterior were simultaneously torn in two cases, and in one case the cusp affected is not specified.

From a study of these figures the most frequent single cusp to be involved is the anterior (nine cases), next, the right posterior (six cases), closely followed by the left posterior (five cases). If one, however, considers the cusp which may be most frequently torn, either singly or in combination with one or two other cusps, we find the anterior is still first (eighteen cases), the right posterior is next (sixteen cases), and the left posterior last (fourteen cases). This finding is somewhat contrary to the early teaching that it is usually the posterior cusps that are torn, but is quite in accord with the statement of Barié,⁷⁰ who found the cusp most frequently involved to be the anterior (which corresponds directly with the interventricular septum), as was seen in one of his seven experiments.

The site of the tear. There may be a rupture of the cusp itself (eleven cases), either at its free border or at its base, and but rarely in the middle of the cusp. As a rule, however, it is a vertical or longitudinal tear of the endocardium, or, rather, of the intima of the aorta, with a consequent displacement of the cusps (thirty-seven cases). As Peacock⁴ wrote in 1873, "It may be that the angles of one or more of the segments are torn from their attachment, or the convex edge of the valve may be separated from the fibrous zone, or the curtain may be torn through."

In our series the strain group revealed only three cases of rupture of the cusp itself, in contrast to nine due to a tear of the angle of attachment, and to sixteen due to a tear of the intima of the aorta near the base of the valve. In the traumatic group there were eight cases of rupture of the cusp itself, to only one of its angle of attachment, and to six of the intima of the aorta. In the small unclassified group, we find no case of rupture of the cusp itself, two of the angle of attachment, and three of the intima near the base of the valve. In the entire series, while the commonest site was a tear of the intima near the base of the cusp (twenty-five cases), rupture of the cusp itself, or of its angle of attachment, being almost equally frequent (eleven of the former and twelve of the latter), we seem justified in concluding that the cusp itself is more apt to be ruptured in direct traumatic cases, and the angle of attachment or the intima of the aorta near its base in the muscular strain group.

Now, as to the state of the valve itself at the time of the autopsy (but not necessarily at the time of the accident), in the strain group it was normal seven times, thickened or atheromatous eighteen times, once with evidence of fresh endocarditis, and four times its condition was not mentioned. In the smaller traumatic group the aortic valves were normal six times, thickened or atheromatous five times, with fresh endocarditis once, and twice their condition is not mentioned. In the third, very small, group the state of the valve is only mentioned in four cases, in three it was thickened or atheromatous, while in one it was covered with recent vegetations. What was specially interesting was that two cases re-

vealed a congenital anomaly of the valves^{43 74}

To summarize, therefore, in only thirteen of forty-eight autopsies, or 27 per cent of the entire series, was the aortic valve reported as absolutely normal, but it was more frequently normal in the traumatic group (44 per cent) than in the strain group (23 per cent). In the great majority of the protocols the aortic valves are described as thickened, atheromatous, or even calcareous. In two cases,^{33, 72} there was evidence of a fresh endocarditis in addition to the rupture, but in both cases it was probably of more recent origin.

The state of the aorta, and especially of the intima near the mouths of the coronary arteries, is of course of great interest. In the strain group the aorta was reported as normal in three cases, smooth but dilated in two and atheromatous in sixteen cases, in three of the atheromatous group there was some dilatation, and in one an aneurysm of the ascending aorta,¹¹⁴ while in two^{37 83} others the mouth of one coronary was obliterated by a patch of atheroma. In the traumatic group, the aorta was both actually and proportionately more frequently normal (five cases), though in one of these it was dilated. In only four cases was there atheroma and in one of these there was also moderate dilatation. In one case of this group¹⁰⁹ there were multiple tears of the thoracic, and a single tear in the abdominal aorta. In the third, or unclassified, group the aorta was atheromatous in two. Unfortunately, no statement about the condition of the aorta was found in nine of the strain group, four of the traumatic and two of the unclassified. In Corrigan's²⁶ case only was the process in the aorta suggestive of syphilis, as the aneurysm in Heller's case¹¹⁴ resembles more a dilatation than a syphilitic one. In general, therefore, the aorta was much more frequently the site of atheroma in the strain group (sixteen cases) than in the traumatic.

As to the state of the heart itself it was reported as hypertrophied in eleven, dilated in six, and both dilated and hypertrophied in nine of the strain cases, in not a single case was it normal, though in four cases the exact state of the heart was not stated. In the traumatic group, on the other hand, it was hypertrophied in one, dilated in three and both hypertrophied and dilated in six, in one case it was said to be

atrophied, while in three cases its condition is not stated. In the unclassified group it was found hypertrophied in two and not stated in three. In short, hypertrophy of one or both ventricles was the rule in all three groups, though frequently dilatation also existed. As to the condition of the myocardium itself, fatty or fibroid degeneration was reported in five cases of the strain group and two cases of the traumatic group. In addition, there was an abscess in the wall of the left ventricle in one case,¹³⁴ an aneurysm of the mitral valve in another,³⁷ two aneurysms of the right auricular appendage in another,⁸² and an adherent pericardium in another case.¹⁰⁷

The usual evidence of cardiac decompensation was found in many cases, especially venous stasis of the lungs, liver and spleen, in two cases hydrothorax, and in two other cases effusions into two or more of the serous cavities, were present. Pulmonary infarction occurred in but two cases,^{67, 137} thrombosis of the right axillary and brachial artery in one case,¹⁰⁰ and a thrombosis of the posterior tibial vein in our own case.¹³⁷ As might have been expected in the traumatic cases, laceration of the parenchymatous organs, liver and spleen or of the intestine occurred twice^{30 109} and once⁴⁶ respectively. In this same group, fracture of the ribs,³⁰ dorsal vertebrae,^{30 109} or of skull was also present in the odd case. An occasional finding was healed or active tuberculosis of the lungs.

PATHOGENESIS

Muscular effort or strain may result in rupture of a healthy valve, though this is naturally a rare event according to both Romberg and Allbutt, and, as already stated occurred only seven times in our series. Muscular effort may lead to rupture of an aortic cusp more readily in a valve previously the site of rheumatic or syphilitic or arteriosclerotic disease, in fact many authorities recognize only this group. Of course, many of the case reports are so lacking in detail as to leave themselves open to the doubt of the presence of some previously existing gross, or at least microscopical, lesion. Lastly, muscular effort or strain may result in repeated mild attacks of valvulitis, and so predispose to subsequent rupture of the valve.

In answer to the question how muscular

effort causes rupture of a valve, Barié⁷⁰ states that during the effort the thorax is filled with air but is immobilized, and the intra-aortic tension is considerable, because during each diastole of the heart the aorta has to support an extreme pressure. Pepper⁵⁸ offers a somewhat similar explanation, "Immediately before the effort, whether at striking, or lifting heavy weights, a deep inspiration is taken, which aids in filling the cavities of the heart to their utmost, and then in order to afford fixed points for the contraction of the muscles of the arms and shoulders and back, the chest is held rigidly fixed. The violent contractions of the neck which follow compress the carotid arteries, while those of the muscles connected with the arms impede the free flow of blood through the subclavians and their branches. Thus, while the tension within the chest is greatly increased and the heart is stimulated to violent contraction, there is also an enormous elevation of arterial tension. The strain which results must extend itself directly upon the walls of the left ventricle, which must over-exert themselves to press forward the blood, and indirectly upon the aortic valves, which are compelled to bear the shock of a recoil of the blood stream violent in proportion." Heller¹¹⁴ believes the explanation of the fact that the predilection site of the tear during muscular effort is the first portion of the aorta is that in many persons the trachea is attached just above the aorta, and that the right bronchus in spastic respiratory arrest is pressed against the aorta. According to Potain, it requires a pressure of twenty to twenty-five c.c. of mercury to break the aortic valves. Barié's⁷⁰ experiments on the cadaver are of great interest. By increasing the intra-aortic pressure until it reached from 116 to 484 mm. of mercury, in ten cadavers dead from various non cardiac diseases, he was successful in producing rupture of one or other of the aortic cusps in four, in two the septal segment (anterior), and in two the left segment (left posterior) were torn.

Trauma may result in rupture of an aortic valve segment, either (a) as a result of a contusion of the chest wall from a kick or a blow or compression of the chest, or (b) as a result of a violent shock to the body from a fall from a height. It must, however, be admitted, with

Allbutt, that in the history of some of these accidents the distinction between the outer and inner stress cannot be made, but probably in all the mechanical process is similar, the external blow violently compressing the thoracic cage.

Barié⁷⁰ and Potain experimented on the cadaver by administering three blows from a hammer on a board fixed to the præcordium. In two out of the five cadavers rupture of the aortic valve occurred, once in the median segment (left posterior) there developed an oblique tear extending from its free border to the attachment, and once a tear of the septal (anterior) cusp.

Dufour⁸⁷ has produced in four dogs a traumatic rupture of the aortic valve. His method was the administration of one to four blows with a mallet over the præcordium, post mortem, several ribs were found broken and in all four dogs the water-test of the aortic ring was positive, the other valves were normal. In the first dog there was a tear of the right posterior and right anterior cusps, in the second dog all three cusps were torn, in the third, rupture of the right posterior had occurred at the insertion, in the fourth dog he found rupture of the right posterior cusp, from its free border to its base, and separation of the left posterior cusp from the aorta.

Kuelbs,⁹ in 1909, used a 40 cm round meat-hammer, weighing 150 grams, and gave one to three sharp blows over the left thorax, the force of which as read by a dynamometer varied from 140 to 180 kilograms or more. The dogs revealed no evidence of pain, but merely of anxiety and shock. Two died spontaneously after the blow, the others were killed by bleeding and chloroform. The pulse was noted as rapid and irregular, heart murmurs became audible in six of the dogs. Post mortem, there were occasional small hæmorrhages into the pericardium, but more often hæmorrhages into the valvular endocardium, especially of the semilunar valves, a tear of an aortic valve occurred only once and that near the nodulus Arantii of one segment. There was often hæmorrhage into the myocardium. In short, 28 of the 34 dogs, or 82 per cent, showed valve hæmorrhages (mitral 12, aortic 7, pulmonary 4, tricuspid 5). Normal heart sounds were sometimes present when the post-mortem revealed a hæmorrhagic valve.

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FISH TAPEWORM*

INTESTINAL INFECTION IN MAN THE INFESTATION OF FISH IN MANITOBA LAKES.

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TAPEWORM infection has always had an unusual interest because of the great size of the parasite. This has led to an early discovery of its life cycle. The main varieties affecting man occur from eating larva-infected beef, pork or fish. Hitherto, the types derived from beef and pork have been commonest in this country. Now, however, they are becoming rarer, while the fish type is becoming more frequent, and it is the most serious of the three.

The symptoms of tapeworm infection vary greatly. A voracious appetite is the exception rather than the rule. Some desire only highly seasoned food. The symptoms of which a tapeworm-infected patient may complain are common to many abdominal diseases. They are colicky abdominal pains, alternating constipation and diarrhoea, nausea, particularly when the stomach is empty, dizziness and neurosis. Frequently, symptoms appear about the time the patient notices the first segments of worm in the stool. There are no typical signs of tapeworm infection. Eosinophilia is present in so small a percentage of cases that it is not valuable in diagnosis.

Two most important points in the diagnosis of fish-tapeworm infection are first, to ascertain whether the patient ever eats uncooked fish which is likely to be infected, and second, if segments of the worm have been noted in the stool. Fish-tapeworm segments may be readily differentiated from those of other varieties of tapeworm, they are broader than they are long and the uterus forms a small yellowish dot in the centre.

Patients who pass large segments of the worm at frequent intervals rarely have anæmia. The anæmia occurs in only about 1 per cent of those infected, and it may vary from a very slight to the most profound pernicious aplastic type. A person may be infected with fish-tapeworm for

several years before developing anæmia. It is a remarkable fact that in patients who suffer from anæmia due to tapeworm the segments are rarely cast off in the excreta but undergo degeneration in the bowel. To exemplify, the following cases are briefly reported.

CASE 1

A. P., aged 11 years, of Scottish extraction and born in Winnipeg, entered the Children's Hospital under the care of Dr O. J. Day complaining that during the past 6 or 7 months she had passed about 40 feet of tapeworm. She had an eager appetite, was losing weight, and was becoming nervous.

Treatment by purgation and Felix mas caused the patient to pass a worm nine feet in length with the head intact. Examination of the segments which were three times as broad as long showed a rosette uterus containing oval eggs. This would definitely identify the worm as *D. latum*. This is the first case of *Diphyllobothrium latum* infection in a patient born in Winnipeg that has come to my notice.

CASE 2

Mrs S. B., 57 years of age, a Jewess who had come from Russia twenty-two months before, was admitted under Dr Charles Hunter's service to the Winnipeg General Hospital, May 27, 1926. She complained of the passage by bowel of long, white, ribbon-like strands, nausea, and abdominal discomfort. Two months previously, and seven months previously, she had passed segments several yards long. For the past seven months she had been nauseated and her appetite poor, she could eat only highly seasoned food. She had lost twenty pounds in the preceding year.

She was a healthy looking woman who showed no physical signs of any importance. A blood examination showed 65 per cent hæmoglobin and 3,600,000 red cells, giving a colour index of 0.9. The blood smear showed a definite variation in size of the red cells. There was no irregularity of outline, but some achromia was present. The white cell differential count was normal, the eosinophiles constituting only 2 per cent. A vermifuge was followed by a large mass of fish tapeworm and one head.

CASE 3

S. Z., consulted Dr A. Hollenberg in October, 1927, complaining of weakness and pallor. He had not been digesting his food well during the past several years, and in 1924 his appendix had been removed for this but without relief. He had come from Russia in 1922.

Physical examination showed a well developed man with a yellow tinge to his skin but in other particulars was essentially negative. There were no nervous or sensory disturbances. A blood examination showed a hæmoglobin content of 65 per cent and 2,500,000 red cells, giving

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a colour index of 1.3. The white blood cells were 8200 per c mm and an examination of the blood smear showed an unusually large percentage of eosinophiles. A saline purge, before and after male fern as a vermifuge, caused the patient to expel about twenty feet of *Diphyllobothrium latum*.

CASE 4

V. P., a young man 22 years of age, who came to Canada from Finland a year ago, developed in the last five months a severe anaemia of the pernicious type. After coming to Canada in February, 1927, he stayed in Vancouver for two months and then came to Manitoba, where he worked near the San Antonio mine. On December 30th he was admitted to the Winnipeg General Hospital under the care of Dr. A. J. Burridge. He complained of alternating constipation and diarrhoea, weakness, blurred vision and he noticed that his skin was pale. In June, while working in the bush, he began to have alternating constipation and diarrhoea, each lasting three or four days. When constipated he would vomit frequently after a meal. At no time did he notice any worms, blood or pus in his stool. Along with the gastrointestinal disturbance he had a poor appetite and suffered from progressive weakness. Two weeks before admission to hospital his pallor was so marked that he noticed it himself. His face was swollen and his vision blurred.

Blood examination showed a severe aplastic anaemia with haemoglobin of 21 per cent (Newcomer method), red cell count 1,200,000, platelets 45,000, and white cells 3,700 per c mm. The smear showed 3 per cent eosinophiles. The red cells in the spread were very scanty and showed great variation in size, with many large forms and a marked hyperchromia of all except the very small cells. (See Fig. 1).

Examination of the stools by the concentration method showed numerous ova, as in Fig. 2. Only by this examination could a correct diagnosis be made in this case.

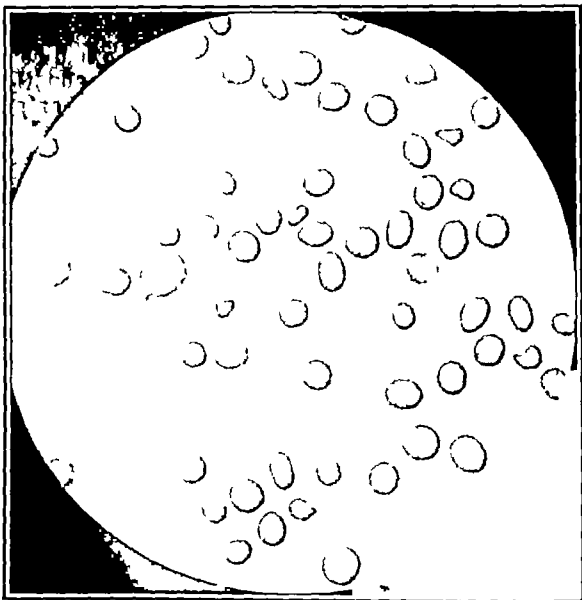


FIG. 1—Blood film from Case 4 ($\times 500$, 1 mm = 2μ) showing scanty hyperchromic cells with great variation in their size and many large forms.

EXAMINATION OF FECES FOR OVA

This examination is very important and is easily done, but because we do not like to examine faeces it is too frequently neglected.

The examination, as usually done, often consists in viewing a very small particle of excreta under the microscope for a moment and rendering a negative report. Ova will frequently be missed by such an examination.

A concentration method is best. It depends on the rapid settling of the ova. The following is the least objectionable and most easily performed. Because of its importance I shall describe it in detail. Do not order a purge before collecting the specimen. Collect a mass of faeces, somewhat larger than a hen's egg, in a quart-sized, wide-mouthed fruit-sealer containing an ounce of formalin and a pint of water. The formalin destroys the disagreeable odour, which is the greatest objection to the examination of faeces. Break up any firm masses with a spatula. Cover the jar tightly and shake it vigorously for half a minute. Allow two minutes for the sediment, which consists of faecal particles and ova, to settle. Pour off the supernatant fluid, and again fill the jar two-thirds full with fresh water. Cover and shake as before. Then, strain the contents through a layer of coarse gauze into another glass jar. Most of the ova will go through the gauze but the large particles of faeces will be held back. The ova are heavy

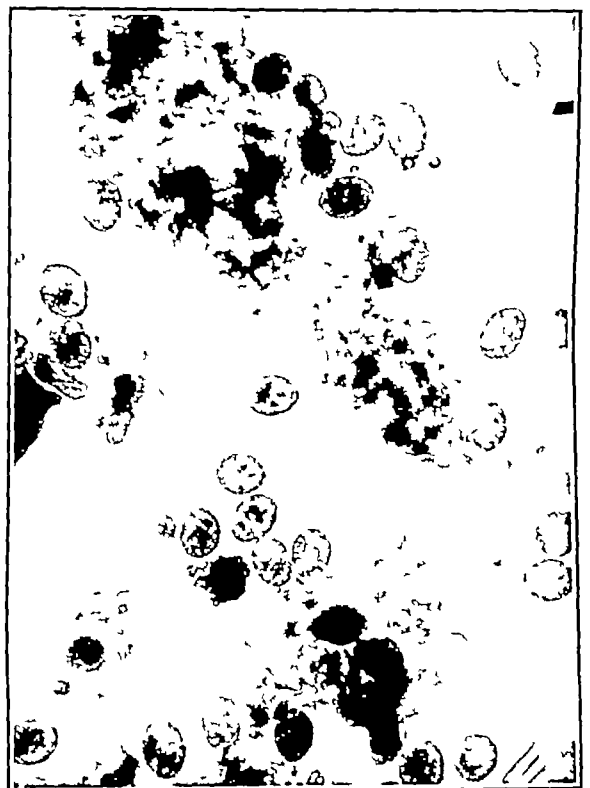


FIG. 2—Ova of fish tapeworm as seen with the low power lens and $\times 10$ ocular ($\times 100$).

and they settle as a dark brown sediment in less than two minutes. Transfer a drop of this sediment by means of a pipette to a glass slide. Put on a cover glass and examine under the low-power lens of the microscope with subdued light.

When ova are present no doubt exists even in the mind of one unacquainted with their appearance. They appear as numerous large oval bodies of uniform size and shape (see Fig 2). The outer membrane is thin and more than a dozen spheres make up the contents. By pressing the cover slip the membrane at one end sometimes separates like a lid and the contents of the ovum may be extruded. There are no other particles in the faeces so unvaried, and if one is in doubt whether or not a few irregular, roundish bodies are ova it is almost certain they are not.

INCIDENCE IN WINNIPEG

The records of the Winnipeg General Hospital show 15 cases of fish tapeworm infection during the past four years. Five of these occurred during 1927. The three cases of associated anaemia noted would make an unduly high percentage. This may be due to the small series or to the presence of anaemia making an infected patient seek hospital care. The hospital records have no index of diseases from 1912 to 1923. Previous to 1912 the annual reports which date back as far as 1886 contain a classified list of the diagnoses with the number of cases of each disease. The earliest mention of a tapeworm was in 1892 and that was a *T. solium*. From that date till 1912 one to five cases of *T. solium* or *saginata* occurred yearly. The irregular sequence of these would lead one to question the classification of type. There was no mention of fish tapeworm.

The infection is frequently treated out of hospital sometimes by giving a vermifuge as a therapeutic test so that the records stated are only a fraction of the total incidence. Although this is true and the hospital capacity has increased from 125 beds in 1892 to 650 beds in 1927 the infection is probably on the increase.

MODE OF SPREAD

Tapeworm infestation is commonest among our new Canadians from Russia and other countries around the Baltic Sea as they still have the habit of eating uncooked fish with salt. Of all the cases noted only one was native born. The longest residence in Canada was eighteen years. Many are fishermen and, if infected, the ova from their excreta soon reach our lakes. Dogs may also act as hosts.

It is very striking that the tapeworm infestation occurs in many Jewish women but not in Jewish men. This may be attributed to the women handling the fish before it is cooked, or, probably, it is due to their tasting a special dish called "Gefilte" fish, to determine the correct amount of seasoning before cooking it. This is prepared by mincing fish with onions, peppers and other spices, rolling it into cakes, which are covered with the fish skin and then cooked.

Very probably Cases 2 and 4 had the tapeworm before coming to this country. Dr A. Hollenberg found that all the infected patients he saw in 1927 ate herring imported from Norway. Previously, when their herring supply had been brought from Alaska, no cases had come to his notice. However, as the pike and pickerel from Lake Winnipeg are definitely infected, human infection will develop from eating them uncooked.

THE LIFE CYCLE OF THE PARASITE

Starting as the larval form in the flesh of fish, the fish tapeworm, *Diphyllobothrium latum*, formerly known as *Dibothriocephalus latus*, when eaten uncooked, will attach itself by the sucker slits in its head to the small bowel of man, dog, cat or fox, and grow, developing segments very rapidly. It comes to maturity and casts off eggs in from three to four weeks. Each segment has in its central part a uterus and ovaries, and in its peripheral part testes and vas deferens, so that each ovum is fertilized as it leaves the genital opening in the segment. The worm may live for several years. When many are found in one individual they frequently do not attain the great size and length that a single one does, though Dr J. C. Todd¹ has reported a patient who had six tapeworms, totalling seventy-five feet in length and then

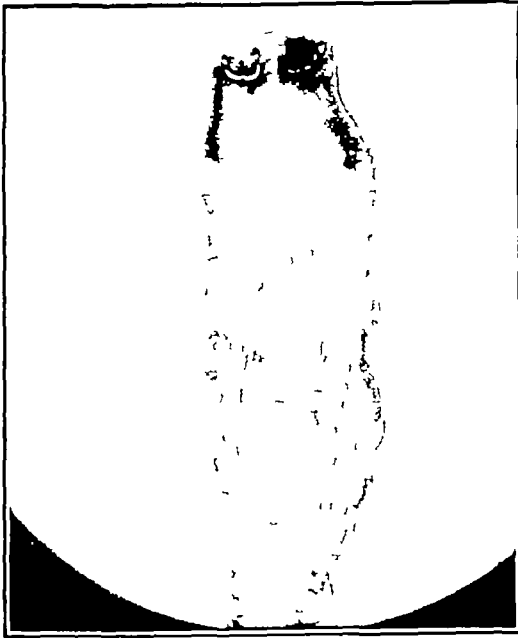


FIG 3—Head of small tapeworm (\20) from intestine of the pike

flesh also showed them in their viscera, chiefly in the liver, peritoneum, or egg-sac. These were not recorded or used for feeding experiments, because only larvae in the flesh are dangerous to man.

The method used was first to remove the skin of the fish and then, with a very sharp knife, pare off thin slices. When the larva is present it is easily seen with the naked eye. It appears as a tiny, opaque, white worm, less than 1/16 of an inch wide and from 1/8 to more than 1/4 of an inch in length, and may be lying straight, bent on itself once, or coiled up. The fish flesh is very translucent in contrast with the opaque worm. This contrast is increased by pressing the fish flesh between glass plates. Even after the fish had been in



FIG 4—Large larva from infected pike (\13) showing segments and the head withdrawn. The tail was curled around in air bubble.

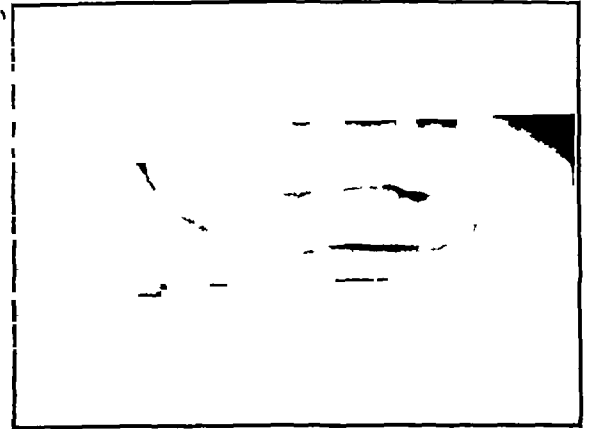


FIG 5—Larva from infected pike (\28). The head is withdrawn and appears as a round mass at the right. The body movements blur the photograph.

cold storage for months, most of the larvae moved about when freed from the muscle and subjected to the warm temperature of the room. A drop of warm water made them especially active. The larger forms contained definite segments and a head that would retract to form a large rounded ball (Fig 4). Then the head as a tiny point would extend from the centre. This would be followed by the body of the worm drawing itself up to the extended head. Some of the heads showed a longitudinal slit.

The larval form photographed in Fig 5 was very active. A contraction-wave would pass down from the head to the tail and there was side-to-side motion as well. Under a magnification of 100 diameters, one could easily discern a streaming of granules, most rapid at the point of contraction, and moving towards the head, while the contraction moved in the opposite direction. This produced some blurring in certain areas, even on quick exposure. On adding a drop of 5 per cent carbolic acid this larva

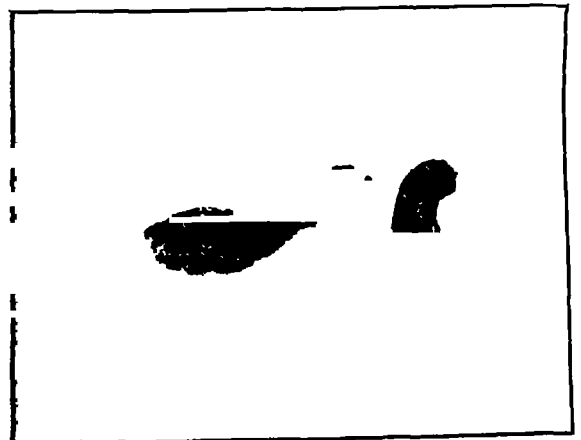


FIG 6—Larva pictured in Fig 5, after applying a drop of carbolic acid to stop its movements (\13).

shortened itself up and ceased moving, when Fig 6 was taken

IDENTIFICATION OF ADULT TAPEWORM BY FEEDING EXPERIMENTS

Finding larvæ, as already described, in the flesh of fish does not prove that they are *D latum* (*Bothriocephalus latus*). Only by feeding these larvæ to dogs can the adult form be developed and identified. Slices of fish muscle containing fish larvæ were used for these experiments. The larvæ were not dissected out and counted. Altogether six dogs were used for the experiment but two had to be discarded, one because he would not eat fish, and the other because he was already infected with tapeworm (*Tænia solium*). Strict precautions were taken at the beginning of each experiment to make sure that the animals were not already infected. The dogs were put in separate cages and three consecutive specimens of stool from each dog were examined for ova or segments of intestinal parasites. The one which was infected showed ova on the three examinations, and later a vermifuge caused four well-formed specimens of pork tapeworm to be expelled. The other dogs, although their stools showed no ova, were given a vermifuge as an extra precaution. This consisted in omitting the evening meal and administering one-half ounce of magnesium sulphate by means of a stomach tube passed through a hole in a wooden bit which is held firmly between the dog's teeth. Next morning a dram of liquid extract of male fern, made up into an emulsion, was administered in the same manner, and at noon a final half ounce of magnesium sulphate was given. None of the dogs used for the experiments passed any segments of tapeworm. The dogs were then fed on puppy biscuits for two days to remove any trace of the anthelmintic that might remain and kill the larvæ in the fish. After eating the infected fish they were fed wholly on dog biscuits to avoid any possibility of tapeworm infection from other sources. Two of the dogs were used for

physiological experiments and the gastrointestinal tract later removed for examination. I am much indebted to Dr. Moorhouse, Professor of Physiology, for his help and co-operation in the animal experiments.

Dog No 1 would only nibble at scraps of the infected fish. I did not think he would be infected in this manner, so he was used in physiological experiments nine days after the feeding. His ileum contained 1 *D latum* with a typical head as illustrated in Fig 7. The segments

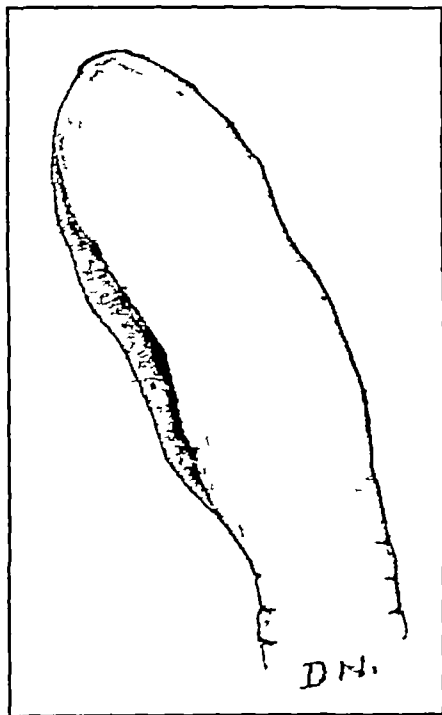


FIG 7—Typical head of fish tapeworm showing lateral slit ($\times 30$) from dog No 1. The shape of the heads varies, especially where there are multiple parasites. Many are heart shaped but all have the lateral grooves.

Many are heart shaped but all have the lateral grooves. The shape of the heads varies, especially where there are multiple parasites. Many are heart shaped but all have the lateral grooves. The shape of the heads varies, especially where there are multiple parasites. Many are heart shaped but all have the lateral grooves.

Dog No 2 would gulp down large portions of the infected fish so he was fed about a pound of infected slices of pike on three consecutive days. More than five weeks elapsed before ova appeared in the stool. This prolonged time was probably due to the large number of worms in

FEEDING EXPERIMENTS WITH THE LARVÆ (plerocercoids) FOUND IN THE PIKE (*Esox Lucius*) AND PICKEREL (*Stizostedion vitreum* MITCH.)

Dog	When Fed Larvæ	Locality and Origin of Fish	Date of Examination	Result
No 1	Feb 8	Pike, L. Winnipeg	Postmortem, Feb 17	1 <i>D latum</i> , 8 inches long
No 2	Feb 8	Pike, L. Winnipeg	Postmortem, Mar 29	19 <i>D latum</i> , 18-40 inches long
No 3	Feb 12	Pickrel, L. Winnipeg	Vermifuge, March 31	5 <i>D latum</i> , 2 heads, 1 $\frac{1}{2}$ to 2 $\frac{1}{2}$ ft. long
No 4	Mar 5	Pike, I. Manitoba	Vermifuge, April 7	8 <i>D latum</i> , 6 heads, 2 to 3 $\frac{1}{2}$ ft. long



FIG 9—Coils of intestine containing strands of fish tapeworm. The arrows point to the position of the heads. The stomach and cæcum may be seen below. Taken from dog No 2.

the intestine. When many are present they do not grow as rapidly or as large as does a solitary worm. Post-mortem examination, seven weeks after infection, showed 19 heads in the ileum. The bodies of all these worms made a cord about half an inch in diameter. Fig 9 shows the intestine containing the parasites. This dog showed many typical ova in his stools for the previous ten days.

Dog No 3 was fed muscle of pickerel containing larvæ. Typical ova appeared in twenty days. They were present in great numbers, but no worm segments were passed. Blood examination showed no anaemia three weeks later. He was given a vermifuge forty-eight days after the feeding of the pickerel. Five tapeworm segments, two with heads attached, were passed. The heads had a groove on the side. The uterus consisted of a small rosette body near the centre, which would stamp it as a *D. latum*. See Fig 8.

Dog No 4 was fed on larvæ infected pike from Lake Manitoba. Four weeks later ova, typical of *D. latum* were found in his stool and a vermifuge the following week caused six whole worms

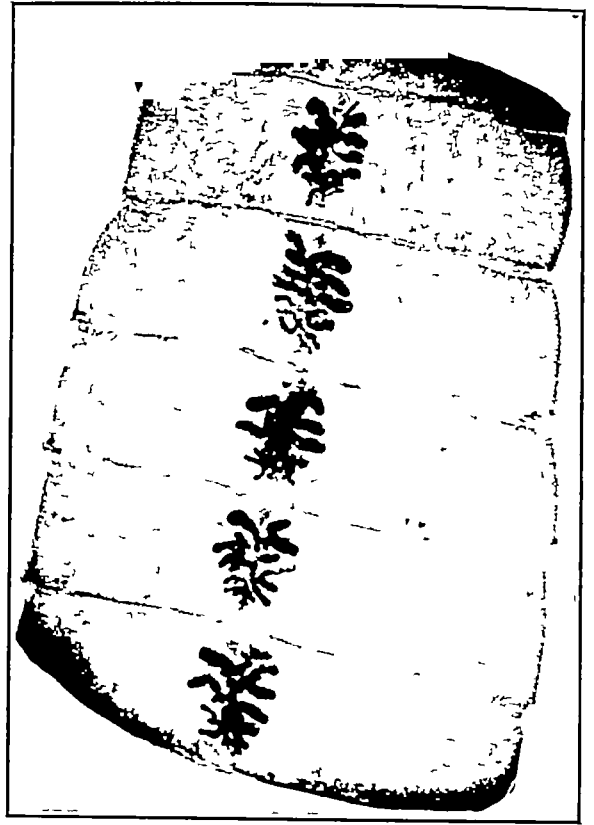


FIG 8—Segments of fish tapeworm ($\times 5$) cleared in methyl salicylate to show the central uterus. From dog No 3.

and two without heads to be expelled. Microscopical examination of the heads and segments showed them to be typical *D. latum*.

PREVENTION OF HUMAN INFECTION

It is impossible to inspect and exclude infected fish for sale in the same manner as meats. The health authorities should warn the public by announcements about species of fish known to be infected. Freezing, smoking, dry cleaning, or pickling in salt does not destroy the parasite. If eaten, these fish should be thoroughly cooked. Five minutes at 65 degrees C will kill the larvæ, and for ordinary cooking the temperature reaches 100 degrees for as long as ten minutes. A possibility of infection remains in some of the quick service restaurants where the cooking may not be sufficiently long to kill any deeply embedded larvæ.

While thorough cooking renders all fish safe, we do not like to eat fish containing larvæ any more than we like to eat measly meat. We should therefore devise means of breaking the life cycle of the *Diphylllobothrium latum* at some point.

I am indebted to Dr Wm Boyd, Professor of Pathology, for the many valuable suggestions he has given me in this work.

SUMMARY

1 Most valuable in the diagnosis of fish-tape worm infection is it to find out about (a) The eating of fish likely to be infected, (b) Carelessness with regard to cooking, (c) The passing of segments by the bowel, (d) Examination for ova by a concentration method

2 Anæmia may be slight or of the severe aplastic type. It only occurs in a small percentage of infected cases, and is usually associated with degeneration of segments, so that none may be passed, though many ova will be

3 The infection is commonest in people who come from the Baltic provinces, especially Finland and Russia, where eating uncooked fish is a common habit. Among the Jews, only the women get the infection because they taste the fish in preparing it for cooking

4 The Winnipeg General Hospital records show 5 cases in 1927, 10 cases in 1924-26. Many

diagnoses of tapeworm are made without stating the variety. Most tapeworm infections are treated out of hospital

5 Seven out of thirty-five pike examined, from Lake Winnipeg and Lake Manitoba, were infected with fish-tapeworm larvæ, as shown by feeding the larvæ to dogs. Two out of seven pickerel were similarly infected. Examination of gold eye, sucker, tullibee, herring and white fish revealed no larvæ in the flesh or viscera

6 Thorough cooking of fish is the most important immediate means of preventing human infection

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ANEURYSM DUE TO TUBERCULOSIS WITH THE REPORT OF A CASE OF TUBERCULOUS ANEURYSM OF THE RIGHT FEMORAL ARTERY*

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THE production of aneurysm of the large arteries by various infective processes has always been of interest to pathologists, and particularly those caused by the tubercle bacillus. Such aneurysms may arise either by direct extension from without, or from within, by involvement of the intima on the one hand or by "mycotic embolic thrombosis" on the other.

Eppinger¹ states, "By a mycotic embolic thrombosis (i.e., in one of the vasa vasorum) there occurs an acute peri- and mesarteritis, leading to complete solution of continuity of the elastica and damage to the resistant remaining tissue (e.g., adventitia) to form an aneurysm." He insists upon the multiplicity of the lesions within a small radius as constituting the strongest evidence of its embolic or thrombotic origin.

As early as 1844, Rokitsky² noted the

relationship of a mycotic abscess to the production of an aneurysm caused by the bursting of an intraparietal abscess into the lumen of the aorta, but the first record of the production of an aneurysm through tuberculosis was by Kamen,³ who described in 1895 the case of a soldier, twenty-four years of age, who had chronic pulmonary tuberculosis and acute military tuberculosis, the former caused an aneurysm of the ascending portion of the aorta just above the aortic cusps, by direct extension from caseous mediastinal glands.

In 1896 Hannau and Sigg⁴ reported a case of an aneurysm of the thoracic aorta, arising in connection with a tuberculous lung cavity. The entire wall became replaced by tuberculous tissue. The cavity was filled with a caseating mass of thrombotic material. Tuberculosis, secondary to other degenerative changes in the aorta and causing marked weakness of the wall has been reported by Huchard and Mouget⁵ in 1904, by Nattan and Larrier⁶ in

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1899 and two similar cases are reported by d'Amblard⁷ in 1906 and 1905

Pel¹⁰ of Amsterdam reported a case of a young girl, twenty years of age, who died from an aneurysm of the superior mesenteric and femoral arteries, undoubtedly of tuberculous origin. The autopsy showed tubercles to be present in the mitral valve. Pel considered that the vascular lesions in this case were due to tuberculous emboli from the mitral valve.

Tozer⁸ reported a tuberculous aneurysm of the abdominal aorta which ruptured into the duodenum. In the media, which was very much thinned out, the elastic tissue was replaced by fibrous tissue filled with lymphocytes. The intima showed tuberculous granulations with numerous giant cells.

In 1910, Ribbert demonstrated a specimen from a woman, forty-six years of age who died of chronic pulmonary tuberculosis, in whom communication had been established between the lumen of the aorta and a cavity lying in a large tuberculous mass, which arose from the periosteum of the vertebrae. The outer layers of the aorta had been destroyed and replaced by tuberculous tissue, and the process had advanced until the rupture of the intima had occurred. A small oblique tear of the intima opened into a short canal which led from the aorta into the cavity. The cavity itself was nearly filled with caseous clot. As he pointed out, this was not a true aneurysm though the circulating blood passed in and out of the sac.

In 1913 Samuel R. Haythorn⁹ reported a case of "Tuberculous Aneurysm, involving the Right Common Iliac Artery." The patient was a male aged thirty-three. The clinical diagnosis was general military tuberculosis, chronic pulmonary and right-sided renal tuberculosis, tuberculous enteritis, and aortic aneurysm. At necropsy an aneurysm of the right common iliac artery was found, measuring 7 cm. in length, 4 cm. in breadth and 3 cm. in thickness. Its wall appeared to be continuous with the common iliac above and with the internal iliac below. When the vessels were opened, the aneurysm was found to involve the common iliac only. The interior of the sac was almost filled with reddish-grey thrombotic material, which appeared caseous. Microscopically, the outer wall of the sac was found to be continuous with the adventitia of

the common iliac above and with that of the internal iliac below. The media and intima took no part in the enlargement. Great numbers of acid-fast bacilli were found diffusely distributed throughout the entire contents of the sac. Acid-fast bacilli were found in the glomerular capillaries of the kidneys, as were also many tubercles throughout the renal substance. Acid-fast bacilli were also found in the lungs. Tubercles were seen in the spleen and liver. Haythorn believed, in this case, that the tuberculous process spread directly to the adventitia of the right common iliac artery from some adjacent focus, that it so involved the media as to lead to rupture, that the pressure of the blood pouring through the opening separated the inner layers of the media from the outer layers and from the adventitia, thus producing a dissecting aneurysm, that the blood in the sac thus formed underwent coagulation, and became infected from the tuberculous adventitia, and thus served as a medium for the growth of the tubercle bacilli and as a source of constant supply of them to the blood.

In 1918, Lutembacher¹⁰ published two cases of aneurysm involving the auricular appendages of the heart, which were proved to be tuberculous. In 1921, Pistacchi¹⁰ reported a case of tuberculous granulomata of the aorta. In 1922, Apert and Bordet¹⁰ showed, before the Anatomical Society of Paris a small aneurysm of the arch of the aorta in a case of tuberculous broncho-pneumonia. Search for bacilli in the sections was negative, but giant cells were found. The authors concluded that this lesion was due to tuberculosis. In 1922, Le Noble, who gives the previous references, himself reported a case of aneurysm of the first portion of the aorta, undoubtedly of tuberculous origin.

In 1925 W. A. Dafoe¹¹ reported two cases of ruptured aneurysm of the abdominal aorta, due to tuberculosis. In the first case he considered that the rupture of the aorta was due to the spreading of the tuberculous process to its adventitia and media from the attached tuberculous lymph-nodes. In the second case the tubercles in the organs were all of fairly recent origin. E. P. Brockman¹² reported a case of aneurysm of the femoral artery in a boy, fourteen years of age, with tuberculosis of the spine. Examination showed the presence of a diffuse pulsating mass in the region

of the femoral artery. A thrill was present and a systolic murmur was heard over the tumour. Pressure above caused diminution of the mass. By operation the aneurysm was removed. Areas of caseation were found. Giant cells were present in the wall, but no acid-fast bacilli were found.

In March, 1928, W. P. Thomson¹³ reported a case of aneurysm of the hepatic artery, apparently caused by invasion of the arterial wall from an adjacent tuberculous focus. This case was a male, aged forty-three, who had had a tuberculous infection of the pubic bone ten years previously. In November, 1926, he was admitted to the Johns Hopkins Hospital with clinical signs pointing to gall-bladder disease. Ten days later, operation showed a large oedematous gall bladder containing blood clot and blood stained bile. No stones were present and the gall bladder was drained. Eighteen days after admission the patient died in coma. The necropsy showed an aneurysm of the hepatic artery. In the common duct there was a thrombus-like mass just above the entrance of the cystic duct. This mass surrounded a tear in the wall of the common duct, 2.5 cm. in length, though there was direct communication with a small aneurysm of a branch of the hepatic artery. Sections showed rupture of the wall of the artery surrounded by a tuberculous mass which contained scattered epithelial cells and giant cells. No tubercle bacilli were found.

REPORT OF CASE

Male, aged 72 years, admitted to the Montreal General Hospital on December 29, 1926.

Complaints—Pain and swelling of the right thigh.

Personal History—He had followed the sea most of his life, latterly as captain of a sailing vessel, had been exposed to all kinds of weather, but had had no serious illness. About three years ago he first noticed a lump in the left groin. This was an indirect inguinal hernia for which he has since worn a truss continuously.

Present Illness—The patient was first seen by the writer on December 15, 1926, at which time he complained of much pain in the region of the inner aspect of the right knee. Examination at that time revealed no evidence of any swelling of the knee or effusion into the joint.

This pain persisted for about five or six days, and was then followed by severe pain on the inner aspect of the thigh, a few inches below Poupart's ligament. The femoral artery was palpable over this mass, but did not seem to be involved in it.

He was admitted to the Montreal General Hospital on December 29, 1926. On admission the whole right leg was larger than the left, the most marked swelling being just below Poupart's ligament and in the upper third of the thigh. The circumference of the limb at the level of the great trochanter was 24 inches left thigh, 17 inches, right calf, 15¾ inches, left, 14 inches, right ankle, 9¼ inches, left, 9 inches. The swelling was bounded above by Poupart's ligament, and below it shaded off gradually into the general contour of the thigh. On auscultation of the tumour, a to-and-fro murmur was heard just below the mid-portion of Poupart's ligament. The whole internal aspect of the thigh was ecchymotic in the upper third.

While in hospital the patient became dull and listless, seeming to lose his memory, and losing all realization of time and place. On January 6th there was an area of blowing breathing over the lower lobe of the left lung and many large rhonchi and fine moist râles were heard. The heart was not enlarged to percussion but was very difficult to hear, no murmur heard. The pulse was irregular and showed extra systoles. On January 7th signs of pneumonia developed over both lower lobes. On January 8th the patient died.

Laboratory findings were as follows. The Wassermann reaction was negative. Red blood cells 3,440,000, white blood cells 9,000, haemoglobin 70 per cent, the urine showed no albumen and no casts, the blood urea nitrogen was 42 mgm., creatinine 1.47, sugar 0.137.

The clinical diagnosis was aneurysm of the right femoral artery, and broncho-pneumonia.

A summary of the findings at autopsy is as follows (A 27-11). Pathological Diagnosis: ruptured femoral aneurysm (right) (tuberculous arteritis), hemorrhage about right femoral artery, miliar tuberculous of the lung, liver, spleen, pancreas, prostate and adrenals, multiple acute duodenal ulcers (four), chronic fibrous pleuritis, thrombosis of femoral vein and its tributaries below an

aneurysm of the right femoral, broncho-pneumonia of the right and left lungs

A swelling of the right thigh was found to be caused by free hæmorrhages into the soft tissues and muscles surrounding a ruptured aneurysm of the femoral artery. The aneurysmal dilatation of the femoral artery began 17 cm from the bifurcation of the aorta. It was 6 cm in length and fusiform in shape. The aorta and iliac and femoral arteries showed considerable atheroma, ulceration and calcification. The femoral vein was collapsed above

the aneurysm, but dilated and thrombosed below it. The whole tumour mass, which was oval-shaped, consisted of the femoral artery and vein, the saphenous vein and tributary branches, the psoas, the rectus femoris, the pectineus and the adductor longus, measured about 4 cm in diameter and 20 cm in length. The surrounding muscles were friable and necrotic, owing to the extensive infiltration with free blood and pressure upon their fibres. The fascia lata directed the free blood anteriorly and medially. The aneurysm was just proximal to the origin of the profunda femoris artery. The deep tributaries of the femoral

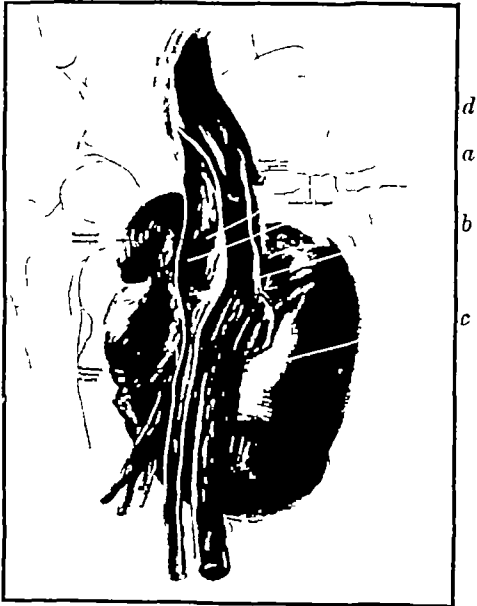


FIG 1—Drawing of gross specimen to show (a) Aneurysm, (b) Thrombosed femoral vein, (c) Extravasation of blood into surrounding tissue, (d) Orifice of aneurysm. Outline of bony structure shows anatomical relations.

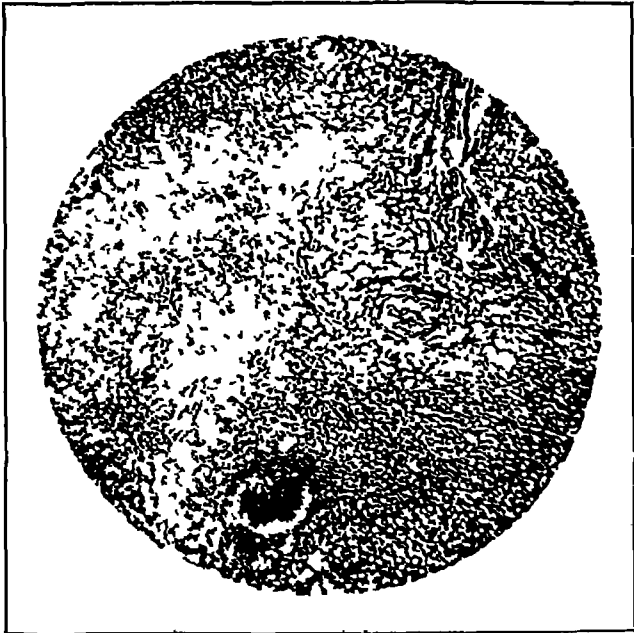


FIG 3—Section of spleen, showing large giant cell.

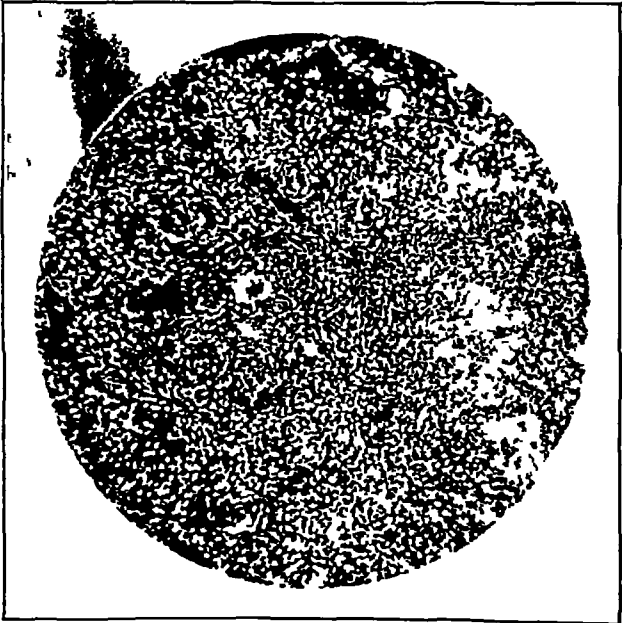


FIG 2—Section of lung showing the presence of giant cells.



FIG 4—Section of liver, showing tuberculous area with large vacuolated giant cell.

vein which lie deep to the artery at this point were thrombosed. The femoral artery and vein were laid open. There was considerable atheroma and calcification of the femoral artery, and the aneurysm was found to communicate posteriorly and medially with the surrounding tissues. No communication could be traced with the femoral vein, which was occluded by pressure of the aneurysm and the surrounding infiltrated tissues and was thrombosed distal to the aneurysm. The escaped blood was held partly between the fibres of the

muscles themselves and partly by their fasciæ, which prevented it, anteriorly, from extravasating more freely into the subcutaneous tissues.

MICROSCOPICAL EXAMINATION

Heart—Endocardium appeared normal.

Lungs—The bronchi contained an inflammatory exudate and were surrounded by a thin zone of inflammatory cell infiltration. Some of them had beside them areas with giant cells and connective-tissue proliferation.

Giant cells were found in the spleen, liver,

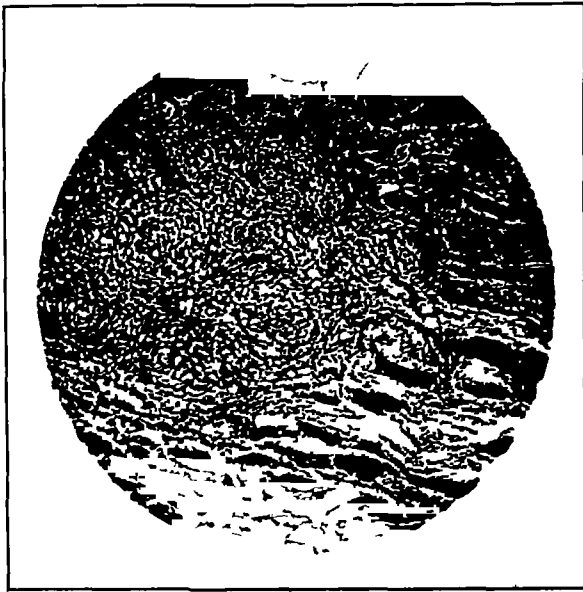


FIG 5—Section showing presence of caseous tuberculous area in media of vessel wall



FIG 7—Section through media of vessel wall, stained for *B. tuberculosis*. Note the great number of organisms, singly and in clumps.

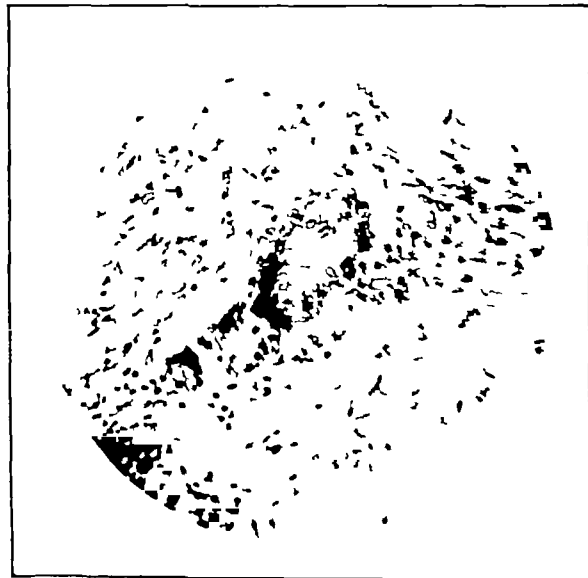


FIG 6—Section showing giant cell in media of vessel wall

pancreas, adrenals, and prostate. None were found in the kidneys.

Report on the femoral aneurysm: "The vessels of the adventitia are engorged. There is extensive necrosis of all coats with slight fibrous connective-tissue proliferation. Giant cells observed. Suitable staining methods reveal the presence of many acid-fast bacilli in the media. These organisms conform to the size, shape and staining reactions of the tubercle bacillus."

SUMMARY

To date twenty cases of aneurysm due to tuberculosis have been reported. In only two of these has *B. tuberculosis* been isolated. In Hawthorn's case *B. tuberculosis* was found in the caseous clot filling the aneurysmal sac. In the present case *B. tuberculosis* has been found in

the media of the arterial wall, showing the infection to have been due to transmission of the disease through the vasa vasorum

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THE DEATH-ROLL OF APPENDICITIS DUE TO THE ABSENCE OF CLASSICAL SYMPTOMS*

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UNTIL within the last year or so I was under the impression that appendicitis was so well understood by the profession that further discussion of the subject before a medical gathering was unnecessary. I have had a rude awakening, due to meeting with far too many cases unrecognized at an early stage, when operation would have been safe and simple, but, left until grave complications had set in, making operation almost, if not quite, futile. The blame for this cannot always be placed upon the family physician, because often he has not been sent for until too late for early operation.¹ Dr W E Gallie states that in 70 per cent of the cases admitted into the Children's Hospital, the appendices had already ruptured. In these cases the parents are almost entirely to blame, because as a rule they have given the child castor oil, and have not called the family doctor until the appendix had ruptured. In these days when the public is so well informed on medical subjects, it is becoming increasingly difficult to explain to them why their loved one was not operated upon at an earlier date, when recovery could have been expected, unless it is pointed out that the cause rests with themselves.

Before entering upon the subject proper of the paper, I should like to make a few further

remarks. It seems hardly credible that only so recently as to be within the professional memory of many of us here, the various pathological phenomena in the right iliac fossa have been shown to have their origin in the vermiform appendix.

Celsus,² who lived in the early part of the first century of our era, speaks of the "iliac and colic passion," which terms were used until well toward the end of the eighteenth century, to describe a condition which we now know to have been due to appendicitis. Peter³ Lowe, writing in 1612, gives the interesting information, on the authority of Lonicerus, that "Hippocrates did die of this disease."

Kionleim⁴ appears to have been the first to remove an appendix for acute disease in 1884. In 1887 Sands⁵ successfully closed a perforation of the appendix by suture while in 1888 Tieves⁶ did a laparotomy for relapsing typhlitis, and found the omentum adherent to the appendix, which was thus kinked. Tieves therefore cut the adhesion, sutured a tear in the peritoneum, bared the convex surface of the appendix of its peritoneal coat, thinking it would thus contract new adhesions with the parietal peritoneum on its outer side, and so be held straight, and closed the abdominal wound, leaving the appendix in its new position. Recovery ensued, but how fantastic the procedure seems to us to-day. Being en-

* Read before the Academy of Medicine, Toronto, November 15, 1927

couraged by his experiences, he next removed the appendix for recurrent attacks, which was the first time that the operation was performed in the interval.

In 1886 Reginald H. Fitz pointed out that in 209 cases of typhlitis or perityphlitis, the symptoms were identical with those observed in 257 cases of perforation of the appendix, which helped to convince the medical world that practically all inflammations in the right iliac region are due to appendicitis. McBurney,⁵ in 1890 described the area of tenderness which bears his name. In the same year Nicholas Senn⁶ pointed out that affections of the appendix were bacterial in origin.

During my year as house surgeon in the old Toronto General Hospital, 1892-1893, I can only remember one case of appendicitis being operated upon and then it was considered such an unusual and important event that the entire surgical staff was present, three senior surgeons actually taking part in the operation. At this period we were still constantly hearing cases described as typhlitis and perityphlitis. In the main, leeches were used to combat the disease or when the disease had thoroughly "ripened" by incised poulticing, the abscess either opened spontaneously or the skin was incised to let out the pus. From 1894-1897 while attending the London hospitals, I saw but few cases of appendicitis operated upon.

Many years were spent in discussion as to whether appendicitis was a medical or a surgical disease. Then, when it became definitely recognized as a surgical disease, there was a prolonged period of discussion as to the proper time at which to operate. Ultimately this was settled and now all surgeons are in agreement that the best time to operate is as soon as possible after the beginning of an acute attack the earlier the better. If done within the first twelve or twenty-four hours the mortality will be little greater than in the case of an interval operation. May I here express my strong conviction that, in doubt about the diagnosis but with reasonable cause for believing that it is a case of acute appendicitis, then give the patient the benefit of the doubt by having the appendix removed. I am sure the risk of the operation is much less than the risk of allowing the disease to progress. Better to remove a dozen appendices not diseased than

to leave one which will progress to diffuse peritonitis.

I should like now to report three or four typical cases.

CASE 1

A boy, G. W., aged ten, was taken ill on Christmas night with slight mid gastric pain and vomiting, but thought by his physician to be due to over eating. He had *no rigidity*. He was somewhat better the next day and had a *normal temperature* and normal pulse rate. On the third day the pain and vomiting returned and continued for forty-eight hours, when his temperature reached 104°, with a pulse rate of 140, but still *no rigidity*. The leukocyte count was 12,000, 88 per cent polymorphonuclears. I then saw that patient for the first time, that is five days after the beginning of the attack, and although there was *no rigidity* to be made out there was slight tenderness on pressure, and I diagnosed diffuse septic peritonitis, due to a ruptured appendix, which was confirmed at operation and found to be of streptococcal origin. He developed cellulitis of the anterior abdominal wall, a subphrenic abscess, and empyema of the right pleural cavity. Although prompt measures were taken to deal with these complications, he finally succumbed.

CASE 2

Mr. S. P., aged 58. He was taken ill with indefinite pain in the abdomen, *but no vomiting*. He had a cough and some rales at the base of his lungs. During the next two days he had pain in the abdomen and distension, but *no special rigidity*, and his physician diagnosed it as influenza and attributed the pain in his abdomen to pleurisy. When I saw him on the evening of the fourth day of his illness, his pulse was 124, his temperature 100°, and the abdomen was greatly distended and of board like hardness. A diagnosis of diffuse peritonitis, due to a perforated gangrenous appendix was made, and the physician and friends told that an operation offered such a very slight chance that I did not advise it. However, I ultimately yielded to their pleadings that he be given a chance, even though it was only one in a thousand. At the operation the peritoneal cavity was found filled with foul-smelling pus; the intestines were glued together and deep red in colour and the appendix was gangrenous. He died two days later of septicæmia and obstruction.

CASE 3

A girl, H. O., aged nine, taken ill in the evening with pain in the abdomen and vomiting. The physician who was called could find *no rigidity* and as the temperature and pulse were both normal, attributed the condition to something she had eaten. As she vomited all the next day, and in the evening her temperature went up to 100° with a pulse of 100 she was brought into the hospital where I saw her. The leukocyte count was 18,000 with 92 per cent polymorphonuclears. There was still *no rigidity*, but a diagnosis of diffuse peritonitis was made. At the operation the appendix was found lying in the pelvis with pus throughout the abdomen of pneumococcal origin. The patient developed intestinal obstruction, acute dilatation of the stomach and ultimately died of septic pneumonia.

I could go on repeating such cases in considerable numbers, but think these are enough to indicate the obvious lesson to which they point. I should like however to refer briefly to another case which does not strictly belong

to the title of the paper, but which furnishes an excellent warning to the public

CASE 4

J C, aged 8, was taken ill with pain in the abdomen and vomiting, the illness continuing for three days without improvement, during which time he was treated by his mother with castor oil and enemata, she thinking that the trouble was due to something he had eaten. The boy himself asked his mother to call a doctor on the third morning, when the latter sent him into the hospital and I operated immediately upon admission and found a ruptured gangrenous appendix, with diffuse peritonitis, due to the streptococcus. He developed intestinal obstruction, acute dilatation of the stomach, and died on the third day.

This case adds another to the long list of fatalities due to castor oil, and makes it more incumbent upon us to devise some more effective method of warning the public of the danger of giving castor oil to children who have abdominal pain. Years ago in papers upon this subject, I called attention to the danger of attributing any abdominal pain to an error in diet and made the statement that I had never seen a case of "acute indigestion" which was a popular term for even medical men to apply to grave abdominal disasters, such as acute appendicitis, perforation of the stomach, etc. Further years of experience have not caused me to change my opinion, but only to confirm it. Every other avenue should be thoroughly explored as a possible cause of the trouble before falling back upon a "symptom," which so-called acute indigestion usually is, and exalting it into the importance of a disease.

The delay in calling a surgeon has often been explained as due to the fact that the patient was afraid of an operation and wanted everything else tried first. It seems to me that if physicians would only acquire the habit of calling surgeons in at the outset of an acute abdominal condition, to help them make a diagnosis, a great step in advance would be made and many lives would be saved. Let the patient and friends know that the surgeon is not being called necessarily for the purpose of performing an operation, but simply because he is the best qualified man to make a diagnosis. Many times he would not operate, but he would have the opportunity of seeing surgical diseases at a much earlier stage, when the patient's chances of recovery by operation would be infinitely greater. I have no hesitation in expressing the opinion that a surgeon

with a large experience in abdominal work is much more competent to make a diagnosis in an abdominal case than is a physician, and that he should therefore largely replace the latter in consulting work in abdominal cases. The attending physician assumes a grave responsibility when he sees a patient at the onset of an acute abdominal disease, as it is upon his diagnostic acumen that the fate of that individual often depends. If he is a wise man he will ask a surgeon at once to share that responsibility with him.

Parents and relatives are only too ready to find something unusual in a "meal" to explain the illness, and it behoves the physician not to fall into this trap, but to exhaust every possible investigation at his disposal to make a diagnosis, always remembering that "an error in diet" is the least likely cause of the symptoms.

The absence of classical symptoms is sometimes due to the appendix occupying an unusual position, for example, below the rim of the pelvis, attached to the bladder, on the left side, or a retro-caecal one. In children there is sometimes no rigidity.

The diagnosis of acute forms of appendicitis usually presents little difficulty. The sequence of the symptoms is most important, first pain, then vomiting, then tenderness over the appendix, later rigidity, and finally fever. Of these classical symptoms, the presence of fever is the least important. Vomiting may not have occurred but if not, there will usually be nausea or a disinclination for food. Tenderness, accompanied by rigidity, is the most constant and reliable sign of the disease. However, in the case of children rigidity is frequently absent, which makes diagnosis often difficult. A leucocytosis of 14,000 or 15,000, with a high polymorphonuclear count of 80 per cent, or more, usually means that the disease has advanced to suppuration, or at least to a very acute stage. At the outset, there is no means of telling whether the attack will be mild and subside spontaneously, or whether it will proceed to abscess formation or diffuse peritonitis. Under these circumstances, the only safe position to take is to advise immediate operation, unless there be some complication which would make operation hazardous.

In the treatment of paresis of the bowel,

there are two agents of great value, namely the administration of saline intravenously, and the use of the stomach and duodenal tubes. In these cases I have had excellent results following the administration of 30 cc of 30 per cent solution of sodium chloride intravenously. This can be repeated if necessary, several times.

The surgical staff of the Sick Children's Hospital, Toronto, have devised an ingenious apparatus for the intravenous administration of salt solution, either isotonic or hypertonic. The apparatus used consists of a burette connected by a short piece of rubber tubing to a perforated rubber stopper. In the lower end of this is an adapter which is commonly used on a 30 cc syringe. The rubber stopper feeds into the barrel of a 20 cc record syringe. Attached to the lower part of this is a rubber tube connected with a gold needle which is placed in the vein. A very simple dressing keeps the needle in place and the rate of flow is regulated by a pinch cock above the syringe. The ordinary Murphy drip as used by Matas¹⁰ was found to fill up under too little pressure and discontinue the flow. In a small percentage of cases thrombosis of the vein complicates this procedure. This method serves two purposes, it supplies the patient with fluid and also replaces his diminishing chlorides. Glucose can be added

The second agent, repeated lavage of the stomach, is a life saver. In many cases, to spare the patient the discomfort of passing the larger tube, he is induced to swallow a duodenal tube, the upper end of which is fastened to his cheek. Through this, one can withdraw the contents of the upper intestine and administer fluids. This can be left *in situ* for many days without causing the patient any discomfort. A word of caution in regard to its prolonged use is indicated, as one must make sure that the patient is receiving a sufficient supply of sodium chloride. I have seen two cases of tetany develop while using a duodenal tube, which I thought were due to depletion of chlorides, through removal of the gastric juices. The cases recovered after the removal of the duodenal tube.

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Diphyllbothrium Latum in Massachusetts—L. G. McGAVRAN and M. SONGKLA, Boston, report two indigenous cases in Massachusetts. The first patient, a boy, aged 3 years 2 months, of native Russian Jewish parentage, began to pass "white strips" about five months before admission which were identified by the family physician as "tapeworms". The diagnosis of *Diphyllbothrium latum* was made later on the finding of numerous typical eggs in a simple smear examination. Further questioning elicited the fact that the patient was very fond of fish and had been caught stealing and eating bits of raw fish while his mother prepared a meal. Physical examination was essentially negative. The other patient, a girl, aged 4 years 2 months, was born in Greater Boston and had lived in Chelsea, Mass., all her life. The father was born in Russia, the mother in Boston, both were of Jewish parentage. The patient passed a 20 foot long yellowish white, ribbon like worm. No head was found. There were no symptoms, and the patient was well all the time. The worm was diagnosed as *Diphyllbothrium latum*, but the specimen unfortunately was not preserved. On the next visit, eggs of the same organism and segments were found and were identified as *D. latum*. Further history revealed that the family

had fish twice a week, usually fried and occasionally as fish balls. The mother did not remember that the patient had her meals anywhere except at home. She had noticed that the patient was in the habit of picking up and putting into her mouth bits of raw hamburger steak while she cooked the family meal. She had not observed the child picking up any raw fish but would not exclude the possibility. Physical examination showed that the child was very well developed and well nourished and entirely normal. Inquiries made at fish markets showed that the chief wholesale supply of fresh water fish comes from the Great Lakes region and the Ohio river. Therefore, the fresh water fish apparently responsible are either white fish, *Coregonus clupeaformis*, lake herrings, *Leucichthys*, carp suckers, *Carpoides thompsoni*, suckers, *Catostomus commersoni*, the common pike, *Esox lucius*, and the yellow perch, *Perca flavescens*, all of which are shipped in large quantities out of the Great Lakes region to eastern markets. Because the sewage of so many towns empties directly into the Great Lakes or other bodies of fresh water, the fish of these regions have every opportunity of becoming infected and must be considered as the probable source of infection—*J Am M Ass*, May 19, 1928, 1607.

VERTIGO OF UNKNOWN ORIGIN, OCCURRING AS A MILD EPIDEMIC

By C B Ross, B A, M D, C M,

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IN the wards of the Muskoka Hospital for Consumptives have been observed several cases which present evidence of functional disturbance of the vestibular portion of the eighth nerve or of the labyrinth, without the accompanying auditory symptoms usually found in Menière's disease

Among the symptoms present, vertigo plays the most prominent part. This is usually severe, especially when the patient is moving and in the upright position. It may be so intense as to cause the patient to stagger in walking, or even to collapse. Even in the recumbent position the vertigo may be very marked, especially on lateral rotation of the head. When the patient lies on his back, the head is frequently held rigidly in one position, usually facing directly anteriorly or slightly to one side, and the information will be volunteered that movement of the head laterally brings on a wave of giddy sickness.

Nausea is always present to some degree, and usually vomiting. Both these symptoms vary considerably in intensity. They appear after the onset of the giddiness, are apparently secondary to it, and disappear before that symptom is entirely gone. When first seen, the nausea and vomiting may be so severe as to make the observer suspect an abdominal catastrophe. Usually, however, the patient gives of his own accord a description of the giddiness, which will always be found to have preceded the gastric symptoms.

Severe headache is usually absent. Sometimes, on being questioned, the patient will state that headache is present, but the usual complaint is of a vague distress, a "heavy" or "dull" sensation behind one or both ears, usually worse on one side. When present, this sensation is most frequently on the side on which, on turning the head, the vertigo is most markedly increased.

Nystagmus is present in most cases and it is variable in type and degree.

Auditory disturbances are never observed.

One patient showed a scarred and retracted ear-drum from a recently incised and healed acute otitis media. Two others gave signs of a mild chronic catarrhal condition of the middle ear. In none of the cases were auditory disturbances found, nor any evidence which would suggest the presence of an active infective process of the middle ear.

A slight range of fever occurred in only three of the cases, lasting two or three days at the most, and only in one did it rise to more than 100 degrees.

The syndrome was first observed in a young man who was suffering from minimal pulmonary tuberculosis, complicated by spinal caries and psoas abscess. Tuberculous meningitis was first suspected, for, though the onset was not typical of this fatal complication, it frequently happens that tuberculous meningitis does not follow in its inception the classical text-book picture. The further evolution of the syndrome, however, satisfactorily ruled out the possibility of tuberculous cephalic or meningeal disease. The majority of the afflicted patients were those who were closely confined to bed because of complications, or because of the advanced extent or activity of their pulmonary lesions. It was thought at first that this constant recumbency might have been a congestive factor in the etiology of the disturbance, but in the last cases to come under observation this possibility seems rather remote.

One might suggest the possibility of the symptoms being due to a toxic neuritis, of a tuberculous nature, of the vestibular portion of the eighth nerve, or to a toxic inflammation of its highly specialized appendage. However, previous experience with tuberculosis has not shown similar cases.

The phenomena roughly shape themselves into a form which suggests an inflammatory disease of infectious origin which, so far as can be found, has not previously been classified. The thought occurred that the appearance of

the syndrome might be part of a mild contagion, protean in its symptomatology, and manifesting itself in other cases in a less characteristic way. But a fairly careful examination of the other patients and residents for local neuritis, myalgia, or general symptoms of obscure infection, has failed to reveal any corresponding increase in the occurrence of these.

The cases on record at the Muskoka Hospital are listed as follows —

CASE 1

H R, male, aged 22. Minimal pulmonary tuberculosis, spinal tuberculosis with pons abscess, immobilized on a Whitman spinal frame.

July 23, 1925, vertigo commenced suddenly and severely, with nausea and severe vomiting. The least movement of the head laterally from the dorsal position served to precipitate an attack of dizziness, nausea and retching. Movements of the head to the left caused more disturbance than to the right. A vague distress was complained of behind the left ear. There was a moderate degree of lateral nystagmus. The condition remained severe for three days and then gradually disappeared, the gastric symptoms disappeared first, and slight dizziness remained until about ten days after the onset. There was no fever at any time. There were no auditory disturbances nor abnormal findings in the ears. There have been no recurrences. Present condition well and working.

CASE 2

R M, female, aged 32. Minimal pulmonary tuberculosis.

January 17, 1927, vertigo commenced suddenly. She staggered and almost collapsed on attempting to walk. Nausea and vomiting were severe, the latter lasting for four days, and the nausea slightly longer. There was severe headache in the vertical region, and a sense of fullness behind the right ear. Attacks of vertigo were precipitated on lateral rotation of the head, particularly to the right. Twelve days after the onset there was still some dizziness, without nausea or vomiting. At this time there was a slight degree of past pointing, nystagmus, rotary in type, looking to right and left, was present but not marked, and the patient could walk on a straight line. Both eardrums were normal and there were no auditory disturbances. There have been no recurrences. Present condition well and working.

CASE 3

M. M., female, aged 41. Advanced pulmonary tuberculosis, intestinal tuberculosis.

February 7, 1927, developed a moderate amount of dizziness, worse on turning head laterally, particularly to right. She was nauseated and vomited. There was no vomiting after the first day, but the dizziness and, to a lesser extent, the nausea, persisted for six days and recurred occasionally for another ten days. Lateral nystagmus was present and fairly well marked. There was no pain nor distress in the head other than the vertigo. There were no auditory symptoms and the ears were normal. There was a rise of fever to 100 degrees from a previous range of slightly above 99 degrees, which persisted with daily remissions for five days, but such exacerbations of temperature were not unusual in this patient. She died from tuberculosis, August 6, 1927.

CASE 4

M M, female, aged 39. Advanced pulmonary tuberculosis.

May 19, 1927, she became dizzy on turning the head to either side, particularly to the right. She was nauseated and vomited several times during the day. Nausea and vertigo persisted with diminishing intensity for about a week. Nystagmus was present during the first three days to a moderate degree (lateral type). There was headache and a vague distress behind the right ear. At no time was fever present. There have been no recurrences. Present condition tuberculosis unimproved.

CASE 5

D C, male, aged 29. Moderately advanced pulmonary tuberculosis, tuberculosis of spine and epididymis, is wearing a spinal brace after having been successfully treated by immobilization on a Whitman spinal frame.

On August 6, 1927, he became dizzy and nauseated and vomited two or three times. Lateral rotation of the head brought on the dizziness. There was lateral nystagmus on turning the eyes either way. There was no headache, nor other distress in the head, save the vertigo which gradually disappeared in about one week. There was no rise of temperature. Two months later, October 5, 1927, he had a similar attack, disappearing gradually in about two weeks, and five months later, March 5, 1928, the symptoms reappeared less severely for three days. There have been no auditory disturbances, both ear drums appear to be somewhat retracted with loss of lustre. Present condition tuberculosis, pulmonary disease and tuberculous complications are quiescent.

CASE 6

F C, female, aged 17. Minimal pulmonary tuberculosis.

On September 25, 1927, she was seized suddenly with vertigo, nausea and severe vomiting. The latter disappeared in twenty-four hours, but slight nausea and considerable vertigo persisted for two more days. The patient staggered on attempting to walk the first day. The dizziness was brought on by lateral rotation of the head, most marked to the left. Nystagmus was not noticed. All symptoms disappeared within four days. One month previous to the attack the patient had complained of an intense pain behind the right ear, involving the pinna, the mastoid area, and part of the lateral scalp, which from its nature and distribution was considered to be a neuritis. This has recurred once, four months after the attack of vertigo. There were no auditory symptoms. The patient had a history of a right-sided otitis media some weeks before, but examination showed a slightly retracted drum with the incision well healed and the ear was otherwise apparently normal. The temperature was slightly elevated for four days. There have been no recurrences of vertigo. Present condition tuberculosis improved.

CASE 7

I R, female, aged 22. Moderately advanced pulmonary tuberculosis, tuberculosis of the right sacro-iliac joint with abscess, simple goitre, immobilized in a plaster cast.

October 17, 1927, was seized suddenly with vertigo, followed by nausea and vomiting. Lateral rotation of the head precipitated the attacks, particularly on turning to the right. There was no pain in the head, but a sense of dullness behind the right ear was described. She vomited frequently for two days, and the vertigo and, to a lesser extent, the nausea, persisted for nine or ten days. Nystagmus was moderate and inconstant. There was no fever at any time. Both ear drums were

normal in appearance and there were no auditory disturbances. There have been occasional recurrences of slight vertigo on turning the head to the right, but these have never lasted more than one day, and have been without any noticeable etiological factor. Present condition: sacro iliac disease considered well healed, pulmonary disease, apparently arrested.

CASE 8

A F, female, aged 30. Advanced pulmonary tuberculosis, right sided hydrothorax, following spontaneous pneumothorax, tuberculosis of the right sacro iliac joint, immobilized on a Whitman spinal frame.

October 23, 1927, was seized with severe dizziness and headache. The vertigo was induced by turning the head either to right or left, but particularly to the right. There was slight nausea but no vomiting. A vague distress behind the right ear was described. The dizziness was marked for four or five days, and there have been frequent recurrences. There was a slight degree of past pointing. Nystagmus was inconstant, usually most marked on turning the eyes to the right with the rapid phase to the left. There were no auditory disturbances. The right drum was retracted with other evidence of a mild chronic catarrhal condition. There was no fever. Present condition: tuberculosis generally improved, still having occasional recurrence of vertigo.

CASE 9

R A, female, aged 24. Minimal pulmonary tuberculosis.

On March 3, 1928, vertigo commenced, followed by nausea and vomiting. She staggered when she walked and almost collapsed. The vomiting was particularly severe on the second day and diminished in intensity on the third. Vertigo and nausea persisted, the former to some degree for nine days. Nystagmus was not sufficiently marked to be recorded. There was no fever throughout the attack, and there have been no recurrences. Present condition, tuberculosis, improved.

To this list may be added the non-recorded occurrence of similar phenomena in three members of the professional or employees' staff

of the hospital. One of these ran a highly febrile course for several days with generalized neuritic symptoms. Another has had recurrences, diminishing in intensity, for three or four months.

M M Fisher, of Gravenhurst, reports one case of severe and unaccountable vertigo, with recurrences over a period of three months.

D W Crombie, of the Calydor Sanatorium, has observed similar phenomena in five or six of his patients, in some of whom recurrences were particularly outstanding.

As regards treatment, the severe symptoms seem to be partially controlled by bromides, luminal or atropine.

CONCLUSIONS

1 Several cases of vertigo of unknown origin are reported.

2 In none of these cases were there present any of the auditory disturbances usually found in Menière's disease.

3 Definite disease of the middle ear occurred so infrequently as to be considered a negligible factor in the etiology of the disturbance.

4 The occurrence of the phenomena in so many cases suggests an infectious and contagious character.

5 The frequency of recurrences denotes that the lesion is of inflammatory nature, and that complete resolution sometimes takes place slowly.

MIMICRY OF THE ACUTE ABDOMEN IN CASES OF CYCLIC VOMITING IN CHILDREN, WITH REPORT OF A CASE

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DURING the years 1923 and 1924 I observed in general practice several cases where the symptom-complex of acute appendicitis was closely simulated in the course of severe attacks of cyclical vomiting. In one of these, where I was in doubt whether appendicitis might be present as well as the recurring disease, I noticed that immediately after the child had vomited he at once relaxed, stretched out his legs, and rolled over on his side. On palpating, forthwith, over the right iliac fossa the rigidity

and tenderness one had observed were almost gone. This seemed to settle the point, as such a dramatic change could hardly have occurred in the presence of acute inflammation of the appendix. The same symptoms recurred in the course of the same child's next attack, and here I used emesis, which followed the drinking of two tumblers of water, to solve the problem once again. The same result, viz, practically complete disappearance of rigidity and tenderness followed the vomiting. In spite of this experi-

once, the parents consented some months later to the performance of an operation, advised by another practitioner, during a subsequent attack. This was quickly followed by death.

During the following winter an experienced paediatrist advised in consultation immediate operation in a very severe case of cyclic vomiting, but on witnessing the result of emesis, produced as before by the drinking of half a pint of cold water, he revised his opinion, and the child recovered from the critical phase of his illness under the use of intra peritoneal alkaline glucose injections.

The case report which follows illustrates the symptom complex noted above and the wisdom or remembering that one may make a serious or fatal error in hurrying on an operation in the presence of a severe condition of acidosis, which may itself be a sufficient explanation of the symptoms present. In the case of B. M. described below, the attack of cyclic vomiting was beginning to break up by the time he reached hospital, because the vomiting phase was nearly over and the local signs suggestive of acute appendicitis had simultaneously become much less significant.

I have been in the habit of referring to my experience in these cases in the course of therapeutic talks during the past four sessions. Dr. Mann tells me that the remembrance of these case histories at once came into his mind when B. M. arrived in hospital, so that the urine tests for acid bodies and a blood count were at once made. Both were against operation, by pointing, the one towards acidosis, and the other away from any condition accompanied by septic absorption. The use of experimental emesis was not called for here, the case having developed favourably beyond its earlier acuter phase. The signs suggestive of acute appendicitis and the stomach symptoms disappeared together.

The history tends to confirm a belief in the common occurrence of the interrelation suggested in this note, between the severe stomach

disturbance and the symptom-complex which might suggest the acute abdomen, especially in the form of acute appendicitis, in cases of cyclic vomiting.

Up to the present I have not met with any reference to the use of emesis as a means of immediate bedside diagnosis in such cases, though it is quite probable that others may have used the same manœuvre. Consequently it seemed worth while to record these observations, in order that the test may be fully put to the proof.

B. M., a boy aged five years, was sent to the Kingston General Hospital on the night of April 11, 1925, with the diagnosis of acute appendicitis requiring early operation.

On admission, the child was slightly stuporous. He complained of abdominal pain and headache. The temperature was 101°F . (rectal), pulse, 100, respirations, 22, leucocyte count was 7,300 per cmm. He was not vomiting, but had vomited a good deal during the afternoon before admission. He had been in perfect health until March 1st, when he had an attack of vomiting and headache. Both symptoms cleared up without treatment, and the child seemed quite well for a month.

The onset of the present attack, on April 13, was characterized by vomiting, headache, and severe abdominal pain, more marked in the right iliac region. An acute appendicitis was suspected, and the mother was advised to bring the boy to hospital.

The examination on admission revealed a perfectly soft abdomen, with no suggestion of splinting anywhere. Tenderness was not marked and the child withstood deep pressure with very little complaint. The abdomen was not distended. Examination of the chest revealed nothing abnormal.

With these negative findings, and the history of an attack of vomiting a month previously, cyclic vomiting was suspected. There was a faint odour of acetone on the child's breath. Urinalysis demonstrated the presence of acetone and diacetic acid, but was negative for sugar.

It was then fairly clear that the child had an acidosis in association with cyclic vomiting. Treatment for acidosis was started immediately. Glucose (5 per cent) with bicarbonate of soda (5 per cent) were given by the Murphy drip. The child was encouraged to drink orange juice, which he vomited at first, but after 250 cc of fluid had been given by the bowel he drank freely of orange juice and the vomiting ceased. Large amounts of fluid were then given by mouth without any trouble and the Murphy drip was discontinued. On April 15 there was only a trace of acetone and diacetic acid in the urine, and on April 16 they had disappeared. The child's condition steadily improved. By April 15 also his headache and abdominal pain had disappeared. The pulse and temperature were normal, and on April 16 he was playing with other children in the ward.

For permission to report this case we are indebted to Dr. I. G. Bogart, to whom the case was sent.

The double red cross, the internationally adopted emblem of anti-tuberculous societies, was used first by certain oriental Christian sects about the ninth century. During the Crusades, Godfrey of Bouillon, duc de

Lorraine, placed it on his standard when he took possession of Jerusalem in 1099. On his return to France it became the emblem of the House of Lorraine.

CASE 4

H. D., aged 4½ years, duration of illness, nearly three years

The kidneys were decapsulated three weeks before death. No bulging of the kidney occurred when the capsule was incised. The capsule stripped readily. Post mortem the weight of each kidney was 93 grams. These organs were slightly enlarged, brownish red in colour, much perirenal fat was present. The cortex was paler than normal and somewhat widened. A few areas of subcapsular hæmorrhage were present. The medulla was brownish red in colour and appeared to be congested. The pelvis was slightly congested. Microscopically, there was a fine fibrosis throughout the kidney, more marked in some areas. Many of the glomeruli appeared to be perfectly normal, but others were atrophied or fibrosed, and showed proliferative changes in their capsules. The tubules showed more change than the glomeruli, many were dilated and contained albumin or desquamated cells, which had in some undergone calcareous degeneration. Some contained casts. The epithelial lining cells were the seat of degenerative changes.

The liver was enlarged and somewhat fatty. The deposition of fat was more marked about the periphery of the lobules. The heart was slightly enlarged, and showed some general fibrotic change. The suprarenals were normal. The spleen was enlarged (child died of streptococcal septicæmia).

The constant findings in these four cases were the increase in the size of the kidney and the preponderance of tubular changes. Glomerular changes were practically absent in the first cases and became progressively more pronounced in the later cases. It is cases like the fourth one, with fairly marked glomerular and interstitial changes, that make one think of the possibility of these cases progressing into chronic interstitial nephritis. Kaufmann and Mason¹⁵ regard the evidence as suggestive of such a possibility, but point out that such changes as occur in the glomeruli are a result of an organizing process about degenerated cells, rather than the result of any inflammatory reaction. Dyke,¹⁶ on the other hand, studied the pathology of nephritis with œdema, and concluded that only the large white kidney found in cases having had gross hæmaturia progressed into the secondarily contracted kidney. Case 3, of the four cited above, furnishes another suggestion of the possibility of secondarily contracted kidney developing. She died more than a year after the decapsulation operation at which the piece of tissue described was obtained. Death was in part due to an infection, but true uræmia with nitrogen retention and high blood pressure were also present. Unfortunately, no post-mortem examination was permitted.

Pathological evidence of the systemic nature

of the disease is shown in the constant presence of fatty infiltration in the liver and usually in the heart. Two cases had congestion and even actual ulceration of the mucous membrane of the bowel. In view of the experiments mentioned above of the effect of adrenalectomy on the production of nephrosis, it may be of interest that in three of our cases this organ was normal, but considerably more friable than usual in the other case.

CONCLUSION

Nephrosis is in all likelihood a systemic disease, in which the kidney is secondarily affected, either by the causative toxæmia itself or by alterations in metabolism produced by the general disorder.

Its etiology is still obscure. Streptococcal infections play no part in its production. The most common organisms isolated in such cases are staphylococci, and the most frequent infectious disease from which the child has suffered is measles.

The renal changes in early cases are fairly well limited to the tubules and are degenerative in type. In more chronic cases the progressively greater involvement of glomeruli and interstitial tissue suggest the possibility that such kidneys might become secondarily contracted ones.

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PRACTICAL CONSIDERATIONS IN THE SELECTION OF BLOOD SUGAR METHODS FOR CLINICAL USE IN DIABETES*

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BLOOD sugar studies, as is well known, are now widely applied in clinical medicine, and the great majority of those making use of such data are not trained biological chemists. It is because of the latter fact that the following observations appear relevant.

The interpretation of all laboratory data used in clinical medicine depends upon a proper appreciation of the principles of the tests employed in obtaining such data. This applies particularly to conditions where two or more technical methods may be used for the same purpose, but each of which may yield different values. The estimation of the blood sugar is an example.

Those engaged for the greater part of their time in laboratory work and acquainted with current laboratory literature know that the methods of blood sugar determinations are at present, in a very unstable state. Improvements are being made continually, and for these we are indebted particularly to Professors Folin and Benedict. Unless, however, one is familiar with the reasons for the alterations of established methods, that is, unless one understands the underlying chemical and physical principles, it is a rather unsafe procedure to change routine methods which have been subjected to thorough trial or replace them by other new procedures which may appear.

In the selection of a blood sugar method there are certain important facts to bear in mind. Firstly, it is now generally recognized, though more by the biological chemist than by the clinician, that the methods commonly in use for determining the concentration of sugar in blood, yield values much greater than would be accounted for by solutions containing the same amounts of glucose in water. There are various reasons for this. One of these is that no one method is specific for glucose. What

these methods measure are reducing substances of blood, and glucose does not account for all of the latter. Since no method is specific, the selection must depend upon other considerations, the most important of which is the following: *A blood sugar test for clinical use fulfils its function only when it detects alterations in carbohydrate metabolism.* Other considerations are, the details of the preparation of reagents, stability of these, and technical details of the actual test. It is obvious that the fewer the number of the above mentioned details, the simpler will be the test, errors will be reduced to a minimum, and the wider will be its application to clinical work.

In our laboratory the Benedict-Myers method is still used for routine clinical work. Many visitors to our department, the majority of whom are making blood sugar estimations but are not trained chemists, have commented unfavourably on the fact that this method is still in use. The writer finds it difficult to agree with the opinions held. It is this fact, chiefly, which has prompted the publication of this paper.

In the course of the routine work of this hospital, approximately 40 000 analyses have now been made with this picric acid method. As a result of this experience, we are quite in agreement with Benedict in his assertion that rarely has the clinician been misled in the interpretation of blood sugar results obtained by the picric acid method. We have also frequently noted the fact, mentioned by Benedict, that the rate of return of the blood sugar to the normal level, as found with the picric acid method, parallels the clinical progress of diabetes more closely than the results of the Folin-Wu method, with which the decline in blood-sugar concentration is found to be more rapid. The reason for this may be found when blood-sugar methods become more exact. One possible explanation is suggested. Picric acid detects

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sugars other than glucose, and the metabolism of some of these may also be disturbed

Some of the conditions in diabetes which lead to hyperglycæmia are dietary indiscretions, fever, suppuration, anæsthesia, and injuries (operations, etc.) These conditions have been observed frequently in our diabetic clinic, and a large amount of blood-sugar data concerning them have, in the course of time, accumulated. For example, as a routine, all diabetics have blood-sugar examinations before and one hour after operation, whether the anæsthesia used is general or local. In diabetics coming regularly to our clinic, the effects of fever, dietary indiscretions, etc., on the blood sugar are observed as a routine. In order to test the sensitivity of some of the more common blood-sugar methods in detecting alterations of carbohydrate metabolism, comparative studies were made of the Folin-Wu, Folin and Benedict-Myers methods. The accompanying tables show a summary of our experiences with these three methods for estimating blood sugar in two of the above mentioned conditions, namely, anæsthesia and dietary indiscretions.

TABLE I

THE EFFECT OF ETHER ANÆSTHESIA ON THE BLOOD SUGAR IN 31 CASES OF DIABETES MELLITUS MEASURED BY THE FOLIN WU, FOLIN AND BENEDICT-MYERS (PICRIC ACID) METHODS

	METHOD		
	Folin Wu	Folin	Picric acid
Hyperglycæmia	23	18	27
No hyperglycæmia	8	13	4
Blood sugar per cent			
Maximum	232	196	256
Minimum	099	088	103
Average	188	158	227

It will be seen in Table I that of thirty-one cases, disturbances of carbohydrate metabolism following anæsthesia were found in twenty-seven with the picric acid method, in twenty-three with the Folin-Wu method, and in eighteen only with the Folin method. The picric acid method was therefore the most sensitive test.

The interpretation of the differences between the results of the two copper tests may be found in a study of the maximum, minimum and average blood sugar values, and in a detailed analysis of the data of individual cases. It might be expected that, while the Folin method is supposed to measure glucose only, the incidence of hyperglycæmia would be the same as with the Folin-Wu method, though the values would

differ, being higher with the Folin-Wu method, since this tends to measure the total reducing substances. That blood-sugar increase does occur is obvious from the following case. The blood sugars after anæsthesia were higher, as determined by the Folin method, than before it, but the increase was not sufficient to lead to a value corresponding to the accepted standard of hyperglycæmia. Thus

TIME	METHOD		
	Picric acid	Folin Wu	Folin
Before anæsthesia	0.111	0.097	0.074
After anæsthesia	0.166	0.133	0.098

From this it will be seen that the Folin-Wu method led to a result higher than the accepted limits of normality. Of all the tests the picric acid method showed the most marked degree of hyperglycæmia. This may be seen from a study of the maximum, minimum and average values recorded.

With dietary indiscretions the results are still more striking. During their periodical visits to the clinic all patients, as a routine, are asked about any changes in diets that may have been made. All of the patients recorded here admitted alterations in diets, some voluntarily, emphasizing that there was no sugar in the urine in spite of the changes, in order to obtain increases of diet. The subjects used in this investigation included only those whose blood sugars at previous visits were normal.

TABLE II

THE EFFECT OF DIETARY INDISCRETIONS ON THE BLOOD SUGAR IN 46 CASES OF DIABETES MELLITUS MEASURED BY THE FOLIN WU, FOLIN AND BENEDICT-MYERS (PICRIC ACID) METHODS

	METHOD		
	Folin Wu	Folin	Picric acid
Hyperglycæmia	18	11	26
No hyperglycæmia	28	35	20
Blood sugar per cent			
Maximum	244	208	270
Minimum	106	079	125
Average	181	161	217

It will be observed in Table II that in spite of definite histories of dietary indiscretions, the Folin method, more specific for glucose than the other two, failed to record hyperglycæmia in thirty-five of the forty-six cases. It may here be observed that it does not follow that there were disturbances of the carbohydrate metabolism in all of these cases, but the fact remains that dietary indiscretion is the commonest cause

of hyperglycemia in diabetes, and that in many cases of such indiscretions, when the picric acid and Folin-Wu test indicated this condition, the new Folin method did not do so. A study of the maximum, minimum and average values again shows that the picric acid method was the most sensitive in detecting alterations of diets.

Apropos of the details of tests, such as the preparation of reagents and their stability, the writer does not know of any method which is more satisfactory than the Benedict Meters. Its greater simplicity makes for greater accuracy. The apparatus required is simple. Since errors due to surface oxidation are not as important as with the copper tests ordinary test tubes may be used. These are readily graduated with the aid of the pipette, at the 10 or 20 cc mark. The reagents are few and very easily prepared. The standard consists of glucose in saturated picric acid, which keeps almost indefinitely at room temperature. The only other solution is 10 per cent sodium carbonate. Since glucose is obtainable in pure form, the only impurity is to be found in the picric acid and the test for the

purity of this substance is extremely simple (Folin and Dorsey method).

RESUME

The selection of a method for blood sugar estimation, as for all laboratory methods, should depend upon a knowledge of the principles involved in the test and the use it is intended to make of the data. In clinical work, a blood sugar test fulfils its function only when it detects alterations of carbohydrate metabolism. Other considerations are simplicity of technical details of the test and the preparation and stability of the necessary reagents. The fewer the reagents required and the longer they keep under ordinary conditions, the more practical does the test become, the fewer the manipulations the simpler is the test and the less are the sources of error. Experimental data are presented which show that the picric acid method fulfils these conditions, and for routine clinical work its use is not only justified but ideal.

A COMPARISON OF THE BUFFER CAPACITY OF VARIOUS MILK MIXTURES USED IN INFANT FEEDING*

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BY the buffer capacity of a milk mixture is meant its effectiveness in holding added acid so that the degree of acidity of the mixture is not increased in proportion to the quantity of acid added. The buffer capacity of a milk mixture depends mainly upon the protein content with its acid-binding amino-radicals and those salts of its mineral content which react with added acid to form acid salts. Thus, one of the buffer salts of milk is basic potassium phosphate, which uses a definite quantity of the added acid and thereby forms acid potassium phosphate, in contrast to this neutral sodium chloride makes no demand upon added acid.

According to Marriott,¹ one of the outstanding advocates of acid milks in infant feeding, the hydrogen-ion concentration of the stomach con-

tents of normal breast fed infants at the height of digestion is pH 3.75 while that of normal infants taking cow's milk varies from pH 4.75 to pH 5.3. He calls attention to the fact that it requires from three to four times as much hydrochloric acid to bring the hydrogen-ion concentration of sweet cow's milk to pH 3.75 as it does to bring breast-milk to the same pH . Lactic acid milk, on the other hand, needs little more than breast-milk does. That is, sweet cow's milk has three to four times the buffer capacity of breast-milk, but in lactic acid milk the buffer is materially reduced and the hydrogen-ion concentration increased by the lactic acid produced in the souring.

Schiff and Mosse,² in a monograph on the use of acid milk mixtures in infant feeding, emphasize the importance of maintaining a normal stomach acidity, particularly to prevent abnormal bacterial break-down of food, also to

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favour peptic digestion There are many other writers who advocate the use of food mixtures designed to prevent the lowering of stomach acidity whose work will not be reviewed here

A comparison of the buffer content of various food mixtures and forms of milk used in making them has been carried out in this laboratory The object was to obtain information as to their relative value as agents in the prevention of the lowering of stomach acidity

The method used was an application of that of Levy, Rowntree and Marriott³ for the determination of the hydrogen-ion concentration of blood of which an adaptation was made by Kramer and Greene⁴ for the estimation of the hydrogen-ion concentration of milk and by Tisdall⁵ for that of stools The treated samples were dialyzed in collodion sacs against freshly boiled distilled water for thirty minutes, and the hydrogen-ion concentration of the dialyzate was estimated colorimetrically For the colorimetric reading, samples to which the appropriate in-

dicator had been added were compared with Clark's colour chart, and the readings were checked by comparison with tubes containing Sorensen standards The Clark chart is accurate and easily used in the range required for this investigation and served as a permanent standard in case the Sorensen standards were found to be spoiled when needed To use this method successfully extreme care is necessary, both in the rinsing of all containers with freshly boiled distilled water, and in the use of uniform tubes and uniform amounts of sample and indicator for the colorimetric comparison

The results obtained are given in two tables In Table I the foods are arranged in the order of their nearness to breast-milk as regards the effect on hydrogen-ion concentration of adding to each the same amount of N/10 HCl, 2 cc This quantity was selected as that which, under our conditions, was found to raise the hydrogen-ion concentration of ten cc of breast milk approximately to the optimum stomach acidity

TABLE I

EFFECT ON PH OF ADDITION OF 2 CC N/10 HCl TO 10 CC OF FOOD AVERAGE VALUES

Food	Initial pH	Resulting pH
Breast milk (various mothers)	7.0	3.6
Butter soup, 2/3, water, 1/3	6.7	2.7
Butter soup, 2/3, lactic acid milk, 1/3	4.2	3.5
Butter soup, 2/3, protein milk (powder), 1/3	4.8	3.5
Butter soup, 2/3, lactic acid milk (powder), 1/3	4.9	3.7
Lactic acid milk	4.3	3.9
Protein milk (powder)	4.6	3.9
Acidulated S.M.A. protein, proprietary protein milk	4.4	3.9
Lactic acid milk (powder)	4.7	4.2
Thick feeding made with 25 oz 2% lactic acid milk and 2½ oz farina	4.6	4.2
Butter soup, 2/3, evaporated milk, 1/3	6.4	4.7
Butter soup, 2/3, pasteurized milk, 1/3	6.7	4.8
Pasteurized milk dilution, 7 oz in 20, with 1 oz cane sugar	6.8	4.9
S.M.A. (proprietary reconstructed breast milk)	6.7	5.2
Evaporated milk, dilution, 12 oz in 40, with 1 oz Imperial granum, cooked 6 hours	6.3	5.3
Evaporated milk, dilution, 10 oz in 30, with 1 oz barley flour	6.4	5.3
Recolac (proprietary reconstructed breast milk)	7.5	5.5
Evaporated milk	6.5	5.5
Similac (proprietary reconstructed breast milk)	7.3	5.8
Pasteurized milk	6.7	5.8
Thick feeding made with 20 oz 2% pasteurized milk and 2 oz farina	6.5	5.9
Dryco (proprietary dried milk)	6.7	5.9

TABLE II.

ACID REQUIREMENT TO BRING PH OF FOODS APPROXIMATELY TO PH 3.6 AVERAGE VALUES

Food	Initial pH	CC Added Acid	Resulting pH
Breast milk	7.0	2	3.6
Butter soup, 2/3, water, 1/3	6.7	0.6	3.5
Butter soup, 2/3, lactic acid milk, 1/3	4.2	2	3.5
Butter soup, 2/3, protein milk powder, 1/3	4.8	2	3.5
Butter soup, 2/3, L.A.M. powder, 1/3	4.9	2	3.7
Lactic acid milk	4.3	2.6	3.6
Protein milk powder	4.6	2.6	3.8
Lactic acid milk powder	4.7	2.7	3.7
Butter soup, 2/3, evaporated milk, 1/3	6.4	3.0	3.5
Butter soup, 2/3 pasteurized milk, 1/3	6.7	3.0	3.7
Pasteurized milk dilution, 7 in 20	6.8	3.0	3.5
S.M.A., proprietary breast milk	6.7	3.5	3.6
Thick feeding made with L.A.M.	4.6	4.5	3.7
Evaporated milk dilution, 12 in 40, long cooking	6.3	4.5	3.5
Recolac (proprietary breast milk)	7.5	5.0	3.6
Similac, (proprietary breast milk)	7.3	5.0	3.7
Evaporated milk dilution, 10 in 30	6.4	5.25	3.6
Evaporated milk	6.5	7.0	3.6
Pasteurized milk	6.7	5.0	3.5
Thick feeding made with undiluted pasteurized milk	6.5	8.5	3.5
Dryco	6.7	9.5	3.7

during digestion, according to Marriott, pH 3.75

In Table II are given the results of an attempt to determine how much N/10 HCl is required to bring each of the foods approximately to the above-mentioned hydrogen-ion concentration and the order of arrangement is that of nearness to breast milk in the number of cubic centimetres needed to accomplish this. Many trials were necessary with some of the mixtures before the desired pH was obtained, and accordingly the averages in Table II for the most part represent a smaller number of determinations than do those in Table I. However, the foods fall into nearly the same order of arrangement in both tables.

SUMMARY OF FINDINGS

Butter soup, two thirds, with lactic acid or protein milk, one-third, gives a food which makes about the same demand upon stomach acidity as breast-milk does. The undiluted acid milks rank in this respect slightly lower than the butter-soup mixtures, and in their class falls acidulitised S. M. A. Protein, a proprietary protein milk. Lactic acid milk-powder seems to contain a little more buffer than the liquid milk or protein milk-powder.

The next class in the order of amount of buffer content includes the butter soup, two-thirds, evaporated or pasteurized milk, one third mixtures, and a seven parts in twenty ordinary milk dilution. These require 50 per cent more acid than breast-milk does to bring them to pH 3.75.

The next group includes two evaporated milk dilutions with added carbohydrate, one, ten parts of milk in thirty, and the other twelve parts in forty, and cooked six hours. With these are to be classed three reconstructed breast milks, S. M. A., Reolac and Simlac, also a thick feeding made with lactic acid milk. Except S. M. A., which really lies between this group and the preceding, the foods of this class need about two to two and one-half times as much acid as breast-milk to bring them to pH 3.75.

The remaining foods in the tables are undiluted milks, unless the thick feeding made with undiluted milk is actually concentrated. These require upwards of three times as much acid as breast milk to bring them to approximately pH 3.6. The differences among the whole milks shown in Table II must be of

some significance, for the separate values making each average varied but little. The reconstruction of the dried and evaporated milks was carried out in the dairy as if for ward use and not with laboratory exactness, but the findings ran almost the same from day to day.

It was interesting to find with Diyeo that, though not very much more acid was needed to bring it to the desired acidity than in the case of pasteurized milk, it showed small response to successive increases in the amount of acid added after a certain point. This behaviour is shown in detail as follows: 8 cc N/10 HCl to 10 cc of the milk, pH 4.3-4.1, 8.5 cc acid, pH 4.2-3.9, 9 cc acid, pH 4.0-3.8, 9.5 cc acid, pH 3.8-3.6, 10 cc acid, pH 3.5, 10.5 cc, pH 3.5-3.4. The finding with 9.5 cc acid seems to be most nearly comparable with the values in Table II as a whole.

One of the food mixtures in the list forms a class by itself. This is butter soup, two thirds, water one third, in which the buffer capacity is less than in breast milk. This food needs only 0.3 as much acid as breast milk to bring its hydrogen ion concentration to pH 3.75.

The information derived from these observations seems to suggest another reason for the favourable effect of the use of the acid milks in combination with other food mixtures. It has been our observation in the feeding of many hundreds of infants that when an acid milk is combined with, say, a butter-flour mixture, or even farina, the clinical results are distinctly more favourable than when these are used in combination with ordinary sweet milk. The procedure of combining butter soup with either cultured lactic acid milk or lactic acid milk-powder or protein milk-powder is merely another link in the physician's armamentarium in feeding certain difficult cases. That all thick cereal mixtures be made with acid milks is also suggested, as an improvement over the use of sweet milk in their preparation.

Thanks are due Miss Jean Hutt and Miss Bertha Coates of the dairy for their great assistance in preparing the material for this work.

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A METHOD OF SERUM THERAPY FOR SEPTICÆMIA*

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IN any discussion on septicæmia it appears necessary to define the term. Admittedly that is difficult. Infection may exist as a small localized focus, or as a condition where all defenses of the body are overcome and the micro-organisms travel freely through and even, on occasion, proliferate in the blood stream. Between these two extremes lies a wide variety of clinical conditions. The terms septicæmia, bacteriæmia, sepsis, pyæmia, and sapræmia are supposed to define certain of these conditions, and to convey to the mind a definite clinical picture. So often, however, do the conditions indicated by these terms grade into one another that a sharp line of distinction cannot be drawn. The very nature of pyæmia, a condition of supposed localized and circumscribed areas of infection, suggests a previous invasion of the blood stream, nor is a subsequent invasion impossible.

Commonly, the term septicæmia is applied to states associated with the finding of bacteria in the blood stream. Increased knowledge, however, derived from the perfection and extension of blood-culture methods, has shown that in many diseases, not designated or recognized as septicæmia, bacteria are to be so found. Invasion of the blood stream, for longer or shorter periods, by the causative organisms is now frequently noted in such diseases as typhoid and pneumonia. Moreover, it is to be expected that in the course of syphilis there has occurred at some time between the onset of the primary lesion and the appearance of the secondary manifestations an invasion of the circulatory system. Again, we distinguish between a meningitis and a meningococcal septicæmia, though the organism may be recovered from the blood in both conditions. As Churchman¹ states "A definition of septicæmia free from all possible objections would appear to be impossible to frame."

There exists, however, a class of cases in which the symptoms due to a general invasion

overshadow those of local origin and which is characterized in part, clinically, by an irregular fever—the so-called septic temperature—by chills and sweats, and associated with a more or less constant invasion of the blood stream by micro-organisms. To such we may apply the term septicæmia. On occasion it is designated by its source, as puerperal or endocardial, also, the name of the causative organisms may, with advantage, further define the condition. Thus the term "puerperal streptococcus septicæmia" designates a fairly clear clinical condition.

The treatment of these patients, and almost without exception their condition is serious, has always been difficult and nearly always discouraging. We lean on general measures in the attempt to increase the patient's resistance, and we try special methods in the hope of destroying or attenuating the infective micro-organism. When feasible, surgical intervention for the elimination of foci is the rule.

The general methods of treatment have been skilfully set forth by Sir Thomas Horder.² They include careful nursing, rest, and selected diet. It might not be out of place here to note two of the points he stresses in the care of these patients, namely, the prompt recognition of the condition, and the prompt institution of a definite method of treatment.

It appears likely, however, from our present knowledge, that it is in the further development of one or all of the special measures, that is, the use of serums, vaccines, foreign proteins, and the intravenous use of the dyes, that success may be ultimately looked for in the treatment of septicæmia.

A simple and obvious principle may be stated at the outset, that, since in this condition there is a definite failure of the body tissues to organize the required resistance or immunity, it would appear logical, if possible to supply that immunity in passive form. All are familiar with attempts that have been made in this direction. For instance, take the

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case of antistreptococcus serum Since the micro-organism most frequently associated with septicæmia is a streptococcus, various stock antistreptococcic serums have been prepared and placed on the market Too often they have proved a frail reed

It will be of advantage to the argument to consider some of the possible reasons why the use of such serums has not resulted in more success First many types of streptococci that may be responsible for a septicæmia exist, and a stock serum too often lacks the essential antibodies for the type causing the infection in the patient under treatment With cultures of streptococci obtained from twelve patients with a streptococcus septicæmia, I failed to obtain agglutination of the causative organisms by various stock serums in ten, and a partial agglutination was noted in but two instances However, it is fair to state that the agglutination power of a serum is not an exact criterion of its efficacy, nor does the apparent absence of that power necessarily indicate that such a serum is without therapeutic value

Second several humoral factors are concerned in the reaction that eventually leads to the destruction of an infective micro-organism following the administration of a specific anti-serum Ehrlich established the belief that in the body tissues there occurs a reaction between the antibody contained in the plasma and the foreign body (infective agent) This may take the form of the action of an antitoxin on its toxin, or of the agglutination of the foreign body, or the precipitation of its products through the action of a specific antibody, or of a union of the foreign body with its particulate antibody The latter may cause a destruction of the foreign body which, in the case of bacteria, is demonstrated by the death or lysis of the bacterial cell Now to facilitate the lysis or death of a bacterium *in vitro* by its specific antibody, complement (alexin) a substance or state normally present in the blood serum is required It is reasonable to infer, even if there exists but limited experimental evidence to support the inference, that *in vivo* complement fulfils a similar and important function

Now the complement power of the person suffering from infection may vary widely³ Sufficient complement to complete the reaction

between the micro-organism and its specific antibody may be looked upon as an asset if not a necessity It is suggested that if the blood of the patient is low in complement power, then the inoculation of a serum containing definite antibodies to the infective bacterium may fail to give the expected beneficial results Such was found to be the case in six patients investigated, who showed a low complement power in the blood, and who failed to improve with the administration of a serum containing immune bodies corresponding to the micro-organism causing the infection Conversely, an investigation of six patients who were not doing well, and whose blood gave a high complement power, showed that the antibody content of their blood serum for the infective organism was low

Besides the use of stock antistreptococcus serums some further attempts at therapy along this line have been made Sir Almroth Wright⁴ introduced a method to which he gave the name "immuno transfusion" The blood is withdrawn from a donor inoculated with a fixed amount of a vaccine, and a few minutes to an hour subsequently the patient is transfused with this blood Later, Colebrook and Storer⁵ suggested the use of defibrinated blood from a donor who had been inoculated with a vaccine one to five hours previous to the time of the withdrawal of the blood They reported some success A further method of transfusion of immunized blood has been described by Hooker,⁶ Diek,⁷ and several others A donor was immunized with a vaccine and, after several days, the patient was inoculated with this donor's blood Good results have been reported in several cases treated by this latter method

The value of transfusions of normal blood in septicæmia has long been a matter of dispute Here, if a definite specific action on the invading organism is expected, one pre-supposes that the donor has the required immune bodies in his serum The method advocated by Polak of small repeated transfusions seems to have given the most favourable results One must bear in mind, however, that in whole-blood transfusions, even on occasions when the bloods appear compatible *in vitro*, the donor's blood cells may be destroyed in the circulatory system of the patient This throws a further

burden on the immunity mechanism of the patient, and an added burden on the complement reserves of the body. Moreover, transfused whole blood, as suggested by Wright, may form a pabulum for the further multiplication of the infective organisms.

In view of the above considerations it appeared logical to attempt to treat some of these patients by the inoculation of an animal serum containing immune bodies, and during the same period with transfusions of human serum. Within the past three years eighteen patients diagnosed as clinical cases of septicæmia, and who had shown repeated positive blood-cultures, were treated. Of these sixteen recovered.

The method adopted was as follows. The invading micro-organism was obtained from blood cultures and grown in serum-glucose broth. The resulting growth having been centrifuged three times in normal saline, a vaccine, in which the micro-organisms had been heat-killed at the minimum lethal temperature, was then prepared, and inoculated into rabbits and guinea pigs. These animals tolerate comparatively large doses of a vaccine containing either streptococci or staphylococci, especially if the organisms are washed free of the media. The dose of the vaccine, starting with one-quarter billion and working up to three billion organisms, was given on alternate days. An agglutination titre of one to five thousand may be obtained as early as the sixth day. Any time after the fifth day blood was withdrawn from the heart with aseptic precautions, and without causing the death of the animal. This blood was placed in the ice chest for eight hours, and then the serum was pipetted off. The patient was inoculated subcutaneously with from three to four c.c. of this serum. Twelve patients were treated with rabbit serum, and six with guinea pig serum. There seems to have been no appreciable difference in the result obtained.

A donor whose blood was completely compatible with that of the patient was obtained as soon as possible. The donor reported at the laboratory and from 50 to 60 c.c. of blood were withdrawn in large vacuum tubes. This was left at room temperature for fifteen minutes and then placed in the ice chest for fifteen hours. The serum was next pipetted

off with all aseptic precautions, examined for sterility, diluted with equal parts of saline, and given by means of a syringe to the patient intravenously. Thus, the patient received an inoculation of the animal serum containing the antibodies subcutaneously, and also received a transfusion of from 25 to 30 c.c. of the donor's serum containing complement. Originally, the treatments were given one week apart, but this was subsequently shortened to two-day intervals. Treatment was continued until negative blood cultures were obtained and the patient showed considerable improvement. The greatest number of treatments given to any one patient was seven.

To isolate the infective organism, culture it, inoculate the animal with the vaccine, and to await the development of amboceptors of value, required at least five days, and to obtain a serum with a more powerful agglutination titre, twelve days. Frequently, the emergency of the case did not brook any such delay. To overcome this difficulty some rabbits and guinea pigs were inoculated with various strains of streptococci and staphylococci. Certain animals received inoculations of a vaccine prepared from fifteen strains of streptococci, which had been obtained from as many different cases of local or general sepsis. Patients were treated at once with the serum from these animals, pending the development in other animals of a specific serum.

ILLUSTRATIVE CASE

Mrs. S., aged 39, strong and healthy, suffered a miscarriage on December 28. On December 31 she complained of feeling chilly, and her temperature rose to 103° F. The temperature continued to range from 97° to 105°, associated with chills and sweats. On January 13th the blood culture showed a hæmolytic streptococcus. On January 20th she developed a panophthalmitis of the right eye. In addition there was a cellulitis of both heels. Petechial hæmorrhages had appeared on the limbs. The patient was weak, listless, and rapidly losing ground. The complement power of the blood at this time showed 60 per cent of the normal. On January 21st, 30 c.c. of human serum were administered intravenously, and, on January 23rd, 3 c.c. of serum from a rabbit which had been immunized with the streptococcus were given subcutaneously, also 30 c.c. of human serum, intravenously. Next day the patient stated that she felt much better. The chills and sweats ceased. The temperature remained lower and changed in type (see Chart I.) The pulse also improved in quality. On January 30th the combined serum treatment was again administered. Blood culture on January 31st was negative. Her condition rapidly improved, the temperature dropped, the panophthalmitis and cellulitis subsided. The complement power of the blood returned to 90 per cent of normal. She went on to complete recovery, though the sight of the eye was lost.

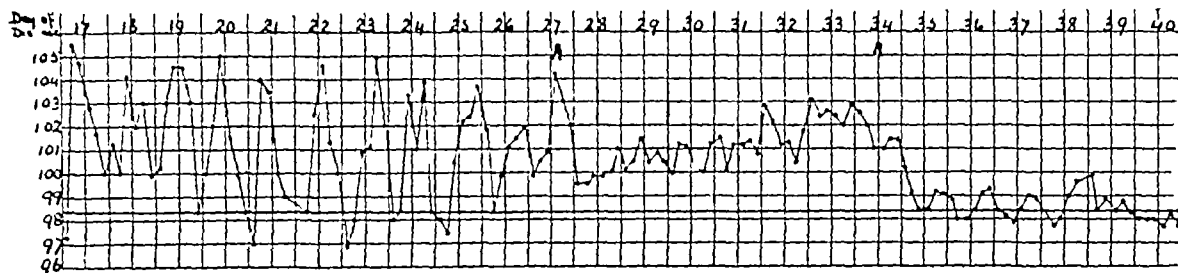


CHART I—A, combined treatment given

COMMENT ON CASES

All the patients, except one (No 13, Table I) were seen only when the course of the disease was well advanced. Each case was considered grave, and this method of treatment was instituted with the majority as a last resort. A definite beneficial response within twenty-four hours of the administration of the first injections of serum was noted in five of the patients, while in the others the improvement was gradual. In two instances the fever fell by crisis (see Chart II), in several there was a distinct change in the type of the curve (see Chart I), and in all cases the swing of the extremes in temperature was modified following the treatment. The pulse improved in quality with the smoothing out of the temperature

About or coincident with the time of obtaining a negative blood-culture a quick and distinct improvement in the patient's general

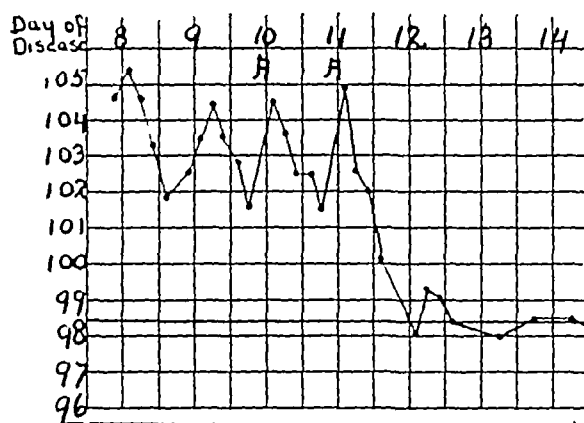


CHART II—A, combined treatment given

TABLE I
SUMMARY OF CASES

Case	Age Years	Origin	Blood Culture	Complications	Day of Disease Treatment Instituted	Complement power of patient's blood per cent of normal	Number of combined treatments	Day following first treat- ment that negative blood culture was noted
1	39	Puerperal	<i>S. hæmolyticus</i>	Panophthalmitis				
2	31	Septic throat	<i>S. hæmolyticus</i>	abscess of leg	25	60	2	8
3	36	Puerperal	<i>S. hæmolyticus</i>	Endocarditis	22	80	5	6
4	42	Septic throat	<i>Diplostreptococcus</i>	Abscess of lung	14	70	6	11
				Panophthalmitis				
5	23	Cryptogenetic	<i>S. viridans</i>	cellulitis of arm	6	90	4	12
6	47	Injury of arm	<i>Streptococcus</i> and <i>Staphylococcus</i>	and leg	62	40	7	15
7	14	Otitis	<i>Streptococcus</i>	Extensive cellulitis	10	60	2	Positive
8	22	Mastoiditis	<i>S. hæmolyticus</i>	Mastoiditis	5	110	3	3
				Abscess of wrist				
9	30	Puerperal	<i>Streptococcus</i>	arthritis	16	90	4	8
10	43	Perforated stomach ulcer	<i>Streptococcus</i>	Abscess of buttocks	31	70	6	10
11	16	Injury to leg	<i>Staphylococcus</i>	Peritonitis	7	100	3	8
12	44	Cryptogenetic	<i>Staphylococcus</i>	Cellulitis	13	90	2	4
13	23	Puerperal	<i>S. hæmolyticus</i>	Endocarditis	3	70	3	7
14	14	Otitis	<i>Streptococcus</i>		5	110	2	3
15	30	Puerperal	<i>Staphylococcus</i>	Multiple abscesses	21	40	6	12
16	15	Otitis	<i>Streptococcus</i>		10	90	3	7
			<i>S. hæmolyticus</i>	Mastoiditis and meningitis				
17	60	Cryptogenetic	<i>S. hæmolyticus</i>	Endocarditis	12	80	1	Positive
18	50	Injury to hand	<i>Streptococcus</i>	Cellulitis of arm	25	60	3	7
					8	90	3	7

Recovery in cases except Nos 6 and 16

condition took place. This was a characteristic feature.

Two patients had developed a panophthalmitis, this condition subsided without surgical interference, following the use of the serum, but the sight of the eye in each case was lost.

While undergoing treatment one patient (No. 3) developed an abscess of the lung. Her general condition, however, continued to improve, and the blood-culture was reported negative. Aspiration failed to relieve the abscess, but she expectorated quantities of pus containing abundant hæmolytic streptococci, and the condition eventually cleared up.

Another patient (No. 14), when first seen, had multiple cutaneous abscesses. Later, and subsequent to treatment, the inflammatory area about these abscesses subsided, and, while staphylococci could be noted in the stained smear of the aspirated material, yet the organisms failed to grow in culture.

One patient (No. 6) was suffering from an extensive cellulitis of the arm, following an injury. Blood-cultures showed the presence of both streptococci and staphylococci. A paralytic state of the bowel had developed, with extreme distension of the abdomen, and she was able to take only a small amount of liquid nourishment. She was semi-conscious. Following the serum treatment the temperature became lower. However, the abdominal distension progressed, and she died in four days. The blood-cultures in this case remained positive.

Another patient (No. 16) with otitis media, whose blood-culture showed the presence of hæmolytic streptococci, developed a mastoiditis followed by symptoms of meningitis. This patient had been treated with mercurochrome and polyvalent antistreptococcic serum without benefit. When seen, he was unconscious. He was given one of the combined treatments, but his general condition remained unchanged, and he died two days later.

DISCUSSION

Naturally, the question arises, how can transfusions of such a small amount of serum as 25 to 30 cc diluted as it must be in the recipient's blood, be of value? However, experimental evidence has shown that, both *in vitro* and *in vivo*, blood with a weak or inactive

complement-power may frequently have that power raised (the complement reactivated) by the addition of small amounts of fresh serum high in complement-power. In the early stages of an acute infection, and as noted in two cases of this series, the complement-power of a patient's blood may be above normal. Since this power may fall with comparative rapidity during the progress of the disease, it was thought advisable to give the transfusions in all cases.

An investigation, after treatment, of the blood for opsonins in six of the patients not only demonstrated an increase of the bactericidal power of the serum, but also showed that the patient's opsonic index to the infective micro-organism was raised. The inference has been drawn that the transfusion of fresh serum reactivates the complement or stimulates its formation with a beneficial result to the patient, but, that such a result depends entirely on bacteriolysis through the action of complement lacks proof. Bacteriotropins (immune opsonins), similar to those found in the homologous immune animal serum, may also be transferred with the human serum, giving rise to an increase in phagocytosis. Moreover, the possibility arises that occasionally a bacteriophage for the infective micro-organism may exist in such serums and be transferred to the patient.

The animal serum containing antibodies was inoculated subcutaneously, contrary to the accepted procedure of giving such serums intravenously. On two occasions in which I gave this serum intravenously the patients experienced within a half an hour a severe reaction, characterized by faintness, pallor, sweating, and feeble pulse. Whether the reaction was due to anaphylaxis, or to a sudden liberation of bacterial toxins from the destruction of the bacteria, or to some other cause, I was unable to determine. Subsequent tests showed the cutaneous reaction to be negative to the serum. I found that the animal serum was absorbed rapidly, when given subcutaneously.

A local reaction, characterized by hyperæmia and swelling at the site of inoculation, developed after the third or later treatment with the animal serum in four of the patients. However, this anaphylactic reaction subsided within three days after discontinuance of the treatment. It

was expected that a reaction might be noted following repeated transfusions of human serum. Only one patient, however, showed a slight reaction—faintness, followed by a sweat coming on within fifteen minutes of receiving the fifth transfusion.

Evaluation of the results of a method for the treatment of septicæmia is a difficult matter. We turn to experiment, but experimental study lacks finality because of the resistance of laboratory animals to bacterial blood-invasion. Then, too, individual cases show a wide variation from each other, not alone because of the variation in the resistance of the host, but also because many different micro-organisms or different strains of the same organism may be responsible for a septicæmia. Moreover, on occasion, patients with septicæmia, even those severely ill, will recover without therapeutic aid.

The results obtained in the patients treated appear to justify a further trial of this method.

SUMMARY

Eighteen patients with septicæmia were treated with repeated inoculations of a homologous immune animal serum, and during the same period with repeated transfusions of human serum. Sixteen of the eighteen recovered.

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INFECTIONS OF THE EAR, NOSE AND THROAT FROM THE GENERAL PRACTITIONER'S VIEWPOINT*

By L. DE V. CHIPMAN, M.A., M.D., C.M.,

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IT was the writer's good fortune to be in general practice for five years, and it is with the general practitioner's problems in mind that this subject is treated.

INFECTIONS OF THE EAR

Infected ears naturally fall into two classes, viz., acute and chronic. This is not a mere arbitrary division, but is of the utmost importance. As we shall see later, one can take chances on symptoms in an acute aural infection that would be fatal in a chronic one.

Let us picture an acute case, an ordinary acute otitis media, such as you frequently see. There is usually a history of a "cold", or evidence of adenoids, there is pain in the ear, in infancy often indicated only by restlessness and crying, there is fever and impaired hearing. Examination of the ear reveals a reddened, bulging drum, with all landmarks obliterated. This is the typical picture though there are frequent variations from the above symptoms. There may be no pain and no fever,

we may see the case early when there is no bulging, in which event one can be content to wait and watch developments.

When the drum is bulging the treatment is obvious. As in surgery elsewhere cut down upon the pus. The drum should be freely incised. The technique of this little operation is important. The knife should be held delicately between the thumb and first two fingers, so that nothing can drive the knife with force, even if the patient jumps. The incision should be made in the lower part of the drum and continued in a curved direction up the posterior part. It is a difficult little operation if done with perfect technique, but with the modern electrically illuminated otoscope, even if one is not accustomed to working with one eye and a head mirror, one can make a simple puncture, and a simple puncture is better than nothing. The beginner is most apt to fail through incising the swollen posterior canal wall in mistaking it for the drum. One free incision is enough. Do not scarify the drum.

We have now reached the second stage

* Presented under the extra mural lecture course in New Brunswick.

Either the drum has been incised, or it has ruptured, and we have an acute discharging ear. The all-important thing now is to keep the ear clean. It is astounding how often one sees these ears almost hermetically sealed with a wad of pus-soaked absorbent tucked tightly into the canal. Often the parents are told to syringe the ear two or three times a day, and keep cotton in the ear between times, and this is the result. Such treatment is entirely unsurgical. These ears should be cleansed at least every two hours when the discharge is profuse, and as much oftener as necessary to keep them clean. Instruct the mother or nurse first, to put in a few drops of peroxide which will soften the pus, secondly, to syringe the ear thoroughly with a hot solution of boracic acid, thirdly, to instil a few drops of a saturated solution of boric acid in alcohol, then wipe dry.

Much has been written about the so-called dry method of treatment of these ears, *i.e.*, wiping or sucking out the discharge instead of syringing. Doubtless the ideal method would be to cleanse them thoroughly with cotton and then use gentle suction several times a day, but if you can get a mother or even a trained nurse to do this efficiently you are exceptionally fortunate. The use of the syringe is practical and gives results.

Be careful to give detailed instructions about the method of syringing. The auricle is to be drawn upwards and backwards, so as to straighten the canal. The tip of the syringe is to be put well within the canal and in the direction of its axis then use copious quantities of solution. A soft all-rubber ear-syringe is good but better still, use a fountain syringe with a quart of warm solution.

How long shall we continue this treatment, and when should we look for beginning mastoid complication? You may take it as a general rule that, if it is a first attack, you can safely watch an acute otitis for ten days.

Let us suppose we have two cases which have been discharging for the ten-day period under consideration. In the one case the discharge is as profuse as ever, or even more so. Look into the ear, and we see that, after wiping away the discharge, the canal fills rapidly, and when the drum is seen pus pulsates through a small opening. The canal wall is reddened

and swollen, so that the lumen of the canal is encroached upon. There is tenderness over the tip of the mastoid and perhaps over the body of the mastoid. There is a leucocytosis of 12,000 or more, and sometimes fever, but do not put too much stress on its absence.

The other case manifests the opposite of all these conditions. The discharge has gradually become less in quantity and improved in quality. When the ear is cleaned out, it remains clear for a considerable time. There is no pulsating discharge through the drum, the canal walls do not sag and bulge, mastoid tenderness has disappeared, and the white cell count is nearly normal. There is a feeling of well-being in the patient which is absent in the first case.

The first case will probably need a mastoid operation. The second, nine times out of ten, will get well without further trouble. If it does not, how long shall we wait? If all possible care has been given, the ear constantly kept clean, adenoids and tonsils removed, when necessary, and general health cared for, then, if the discharge persists freely, after five or six weeks treatment, it is much better to do a mastoid operation than to go on with a chronic running ear. If properly done, the operation is practically without danger and results are good in every way, whereas a chronically running ear impairs hearing, and is always a menace and a burden.

A word about the acute aural inflammations which arise as complications of the exanthemata or of pneumonia. Often the symptoms are masked and only constant alertness will afford an early diagnosis. The treatment is essentially the same, with the exception that the patient's general condition is of more importance when considering operation.

With a chronic discharging ear one is always, figuratively speaking, sitting on a powder barrel. Acute symptoms are to be considered with utmost seriousness. Pain or distressed feeling in the head, especially if associated with temporary suppression of the discharge, dizziness, the presence of polypi in the canal, a foul discharge with dead bone palpable by an attic probe are all danger signals, and are indications for a radical mastoid operation. In the absence of these

symptoms cleansing is usually all that is required. The point to be remembered and impressed upon our patients is that the development of these chronic affections can be prevented by treatment, with systematic follow-up and control, of all acute cases.

INFECTIONS OF THE NOSE AND THROAT

We cannot to day be content with making our general examination from the neck down, as we used to do, and simply hope that there is nothing above that disturbing our patient. It is being generally recognized throughout the medical world that a very large proportion of our office patients, the chronically unwell class, are primarily suffering from upper respiratory tract infection. The vast number of people complaining of headache, neuralgias, neurasthenias and migraines, of chronic cough, bronchitis and asthma, of arthritis and so called chronic rheumatism are being studied as never before, and, in a large proportion of these cases, the original focus is being traced to infection in the nose and throat. Is this merely a fad, or perhaps a tendency of the medical pendulum to swing to extremes? Let us consider the reasonableness of the proposition. In the nose are two mucosa-lined passages, each connected with a whole series of blind sinuses or cavities, often with inadequate ventilation and drainage. Through this passage, or through the mouth, must go all the air we breathe. Now, under our modern civilization, in a northern winter climate, we take thirty, forty, yes even sixty children, put them in one room for two or more hours at a time, raise the temperature to between seventy and eighty degrees, have the air so dry that it irritates not only the delicate mucous membranes but even the tough skin, add some chalk dust, and then allow half a dozen children with acute coryza to cough germs around promiscuously. Can we wonder that nasal infections are prevalent? Then given a chronic nasal infection, with germ-laden discharge pouring out day and night, some of it being swallowed, some aspirated into the bronchi, the natural sequence seems to be chronic systemic disease and depression.

Nose and throat infections then are important enough to bear in mind when examining any one in chronic ill-health. What are we to

look for, and how can we go about making a diagnosis in the few minutes at the disposal of a busy practitioner? As in other infections, we have to deal with acute and chronic phases.

Acute infections are comparatively simple to diagnose. There is usually a history of cold in the head, which persists, often with pain and tenderness around the eye or brow. A persistent cold in the head, with one sided nasal discharge, is a definite sign of sinus infection.

If the membranes are much swollen, shrink them by packing the nose lightly with 5 per cent cocaine for five minutes using thin cotton pads dampened with the solution. This gives better ventilation and drainage. If you have any sort of suction apparatus apply it several times for short intervals. Next, pack the nostrils with cotton pledgets soaked in 10 per cent argyrol. Tease out a thin layer of cotton on the first joint of your left thumb. Soak thoroughly with argyrol then, holding one end over an applicator slide it along the septum to the upper posterior part of the nostril on each side and leave it there for twenty or thirty minutes. Repeat this treatment daily. These pledgets seem to have an osmotic effect. Copious secretion results so that the patient must be provided with a large gauze handkerchief. There is often spasmodic sneezing and reddening of the eyes, but the patient is greatly relieved and the head feels cleared. This simple treatment will clear up many an acute sinusitis and be helpful to all acute rhinitis cases. It should of course be combined with general treatment, such as careful diet, rest, and proper ventilation.

Coming to chronic nasal infections, we have a difficult field which needs all the skill we can possibly acquire, for many cases are overlooked even by men whose special field this is. There are, however, certain basic principles of examination, easily mastered, which will indicate the trouble, if present, in the great majority of cases.

First, as in all diagnosis, the history is of great importance. These patients usually do not complain primarily of nasal symptoms, but rather of those suggesting tuberculosis. There is languor, fatigue, often cough with morning sputum, and bronchitis, sometimes a slight evening rise in temperature. Hoarse-

ness is frequent, and nervous symptoms, such as headache, depression, neuralgia, migraine and neurasthenia are usually present in some degree. In a recent analysis of 100 cases I found that 32 per cent, practically one-third, complained of head-pains of some description. Frontal and occipital pain is most common. There is usually phlegm in the throat and post-nasal dropping, with an occasional bad taste in the mouth, especially in the mornings, but the patient may be so accustomed to this that he is entirely unconscious of it and only questioning will bring out the complaint.

The patient comes then with obscure head-pains or neuralgia, post-nasal discharge and general depression. Sinus infection must be considered. How are we to find out more about it? Under good illumination with a head mirror examine the nostrils and note whether the passages are free or blocked. In a normal nose with fairly straight septum the inferior and middle turbinates hang freely in the nostril and are easily seen. There is ample room for ventilation and drainage. A blocked, obstructed nostril predisposes to sinus infection. Beware, however, of putting too much stress on a curvature in the septum or a spur. Frequently these are innocent of real harm and should be left alone, unless causing symptoms such as real obstruction to breathing, frequent colds with blocking of discharge and pain. The submucous operation for straightening the septum is an invaluable operation when needed, but it is much over-worked.

Next examine the mucous membranes. The normal mucous membrane has a clear, glistening, ruddy appearance, more easily recognized than described, and very different from the boggy, deadened appearance of the membranes so frequently seen in chronic sinus cases. Observe any discharge which is visible, and note if it comes from under or over the middle turbinate. Then, if there is much blocking of the nostrils or swelling of the membranes, pack the nostrils lightly with 5 per cent cocaine for ten minutes. This will, by shrinking, give us a much better view and allow discharge or polypi, formerly invisible, to appear. Suction applied at this stage is also valuable.

Next transilluminate the sinuses. This is a valuable adjunct to diagnosis. It is simple,

quick, easy, and often puts one on the right track. Compare the clearness of the two sides carefully, under different degrees of illumination. Do not forget to remove any upper artificial dentures. Should one antrum appear dark, antrum puncture is of great value in substantiating the diagnosis.

Last, but not least, comes x-ray examination. A good x-ray plate is a wonderful help, but unfortunately much experience and special technique are required on the part of the roentgenologist to make the plates reliable.

When once the diagnosis is established, the treatment is mainly surgical. If the condition is of recent standing, *i.e.*, within a year, usually free intra-nasal drainage is sufficient, whether it be an antial, frontal, ethmoid, or sphenoid infection. In longer standing antral cases, the radical Caldwell-Luc operation is preferable. Only in persistent and severe cases is the radical frontal needed. With properly carried out surgical measures, the results in nearly all these cases are good, and often wonderfully good.

Before leaving the nose, a few words with reference to sinus infection in children are necessary. Sinusitis is much more prevalent in children than is generally realized. It is comparatively easily recognized if looked for. As with adults, the complaints frequently refer to general conditions. There is listlessness, loss of colour and appetite, and undernourishment. On examining the nose the mucous membranes are apt to be found swollen and boggy, and a muco-purulent discharge may be present. A nasal discharge in a child which persists, even after the removal of adenoids and tonsils, is fairly definite evidence of sinus infection.

Little time is left for the consideration of throat infections, but the tonsils must be referred to. Here, also, especially in adults, the history is of as much importance as the examination. Is your patient well? If not, why not? If he has pains in the joints, with poor general health, naturally, evidence of disease in the tonsil is of far more significance than if he were robust. One's tolerance for infection varies as much as his tolerance for whiskey, and it is the individual that we must treat, not the tonsil.

In examining the throat in adults, merely looking at the tonsils by pressing down the

tongue is of little value, though one may get a hint of disease if the anterior pillars are deeply injected. Large fibrous, ugly tonsils are often more innocent of disease than small buried ones. Take a retractor, pull back the anterior pillar and press on the tonsil. A thin milky or purulent discharge indicates the worst type. Large open crypts with white cheesy material often seem to do little harm. It is possible, use suction to bring out the character of the discharge. Often one has to rely on general symptoms, rather than local, together with a carefully taken history. I recall two

recent cases in which the tonsils were small with little apparent infection, but the patients each gave a history of periodic prostration and indigestion accompanied by an inflamed throat. We found a large buried abscess in one tonsil in each case. In children the size of the tonsils is important, also any enlargement of the anterior cervical glands.

It is impossible in a paper of this kind adequately to cover even one phase of the subject, but enough has been said to illustrate the practical importance of this work in every practice, and possibly to stimulate interest in it.

INTESTINAL GRIPPE (SO CALLED)

By FRANK H. BOONE, M.B.

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SINCE 1918 a term has arisen which is applied both by laity and physicians to certain types of cases. It has been used so generally that one must consider the possibility of the condition designated thereby, which is described throughout the world, and frequently called "intestinal gripe" or "intestinal influenza."

Influenza was epidemic in this country in 1918 and 1919, since then it has been endemic in the colder seasons. During this period of the year we meet the cases that have been classified as intestinal gripe. Most doctors, with whom I have talked, feel that some indefinite condition does occur during this time, which is closely related to influenza, but concerning the actual identity of which they are uncertain. I have discussed this subject with several whose practice is limited to children. All mentioned various patients they had seen with symptoms which they thought might be classified within this group. In some there was severe diarrhoea, with mucus, blood, and even pus. One must of course remember that bacillary dysentery occurs even in the winter months, personally, I recollect having seen proved cases in November, December and January. One paediatrician, whom I know to be a keen observer, went so far as to claim a seasonal incidence for intestinal gripe. During the months from November to January he had seen many patients in welfare clinics who gave the following history: sudden onset,

with violet vomiting, followed by marked anorexia, drowsiness, slight fever, and irritability. Usually there was some diarrhoea. He had observed this every winter for the last four years, and though he did not feel justified in saying that the symptoms were due to influenzal infection, he considered it possible. When reliable men express such ideas, one must hesitate before they are cast aside as purely imaginary.

Definite diagnosis, however, is complicated by the great number of widely different etiological factors able to provoke similar symptoms. It is well known that frozen milk will cause frequent and severe gastro-intestinal disturbances in young children. Parenteral infections of all types are so often attended by intestinal disturbances that in many cases of so-called intestinal gripe, I feel a differential diagnosis would be impossible. Recently the rôle of paranasal sinus and mastoid infection have been especially emphasized. John Thompson,¹ of Edinburgh, under the heading of parenteral infection, says, "The disturbance of the alimentary canal may be predisposed to by the acquisition of an infective condition in other parts of the body, such as catarrh (influenzal or other) in nasopharynx, ear, bronchi or urinary tract, which so weakens the patient as to set up a food disorder which would not otherwise have arisen."

For many years writers have mentioned gastric and intestinal symptoms in influenza,

both adults and children being affected, but mainly the latter. In many of the text-books, both old and new, the authors have included a gastro-intestinal type, but are not willing to recognize it as a distinct clinical entity. Frederick Loid,² writing in Osler's *Modern Medicine*, classifies influenza under nine headings. Of the gastro-intestinal type he says "This form of influenza is an entity of uncertain existence. The symptoms referred to this tract may be toxic phenomena, secondary to the respiratory and nervous form." He had never seen a case with absence of the respiratory symptoms in which the diagnosis was certain.

J. A. Light,³ during an epidemic of several hundred cases of influenza, was unable to find one case of a typical gastro-intestinal form. In many the abdominal symptoms were so marked, and those in other parts of the body so mild, that one might easily believe them to be the result of infection or some lesion of the gastro-intestinal tract. In none was he able to show this to be a fact. The respiratory symptoms were sooner or later recognized in all. He stated that in autopsies performed at the Mercy Hospital, Pittsburg, none revealed any characteristic lesion which could be attributed to influenza, unless one accepted hyperplasia of the solitary lymph-follicles as such. Dr. Oskar Klotz was quoted as finding no distinct gastro-intestinal lesions in autopsies on cases dying of influenza at the Magee Hospital. This writer also reviewed the article by Lichenstem on Influenza in the American edition of *Nothnagel's Encyclopedia of Practical Medicine*, which describes a pathological condition occasionally found in the gastro-intestinal tract, namely, a hæmorrhagic condition, and swelling of the Peyer's patches and solitary lymph-follicles, but he believed that these could readily be explained as being coincident or secondary, inasmuch as they might be found in the course of any acute infection. He felt it was obvious that the seat of primary infection in influenza was in the respiratory system, and that there were insufficient data to warrant the designation of a gastro-intestinal form. He believed that this form should be regarded rather as a complication or sequela.

In reviewing the current literature, I have found some variation in the types of abdominal and intestinal influenza or grippe described. I feel justified in roughly separating these reports

into two groups, one in which diarrhœa was seldom present, in the other, always present.

D. A. Rice and H. O. Williams⁴ reported ten cases, seen in five families during a mild epidemic of influenza, which they considered as possibly of an abdominal type. The symptoms noted were marked inflammation of the eyes, abdominal pain referred to the umbilicus, vomiting, and in some cases diarrhœa with considerable collapse. Pain in the muscles of the neck, legs and arms was also a marked feature.

F. Colmes⁵ reported three cases of spastic ileus associated with influenza. The onset was acute, with colic, persistent vomiting, and severe subjective symptoms. In all a diagnosis of intestinal obstruction was made, but unconfirmed at operation. He considered as possible causes the action of the central nervous system on the intestinal musculature, inflammation produced by pathologically affected mesenteric glands, or possibly absorption of toxin from the intestinal tract.

James Burnett,⁶ of Edinburgh, divided his influenza cases in children into three groups, catarrhal, cerebral and colic. Of the latter he saw six cases, two in each of two families and the remainder isolated. The patients complained of colic pain in the region of the umbilicus, which gradually increased in intensity. On examination, the abdomen was definitely tender in the centre, but peripherally and in the flanks this was not noticed. Vomiting never occurred and the tongue was coated. Partaking of cold fluids increased the pain, but this was not so with hot fluids. There was no diarrhœa, but rather a tendency to constipation. Pain was intermittent, disappearing for long or short intervals, only to return again as severe as before. The temperature remained elevated about one week and gradually fell to normal, never suddenly. The irritative cough, so typical of influenza, was a constant symptom.

The following case-history, from my own practice, presents many points of resemblance to those just quoted from the literature.

CASE 1

J. C., male, aged six years, first seen September 28, 1925.

Family history—Unimportant.

Previous illnesses—Mumps, measles, occasional attacks of tonsillitis.

Complaints—Pain and fever of twelve hours' duration.

Present illness—September 28, 1925. He com

placed of pain in lower left side of chest. The temperature was 102°F . He was apparently acutely ill and tender on palpation under left costal margin. The throat was acutely inflamed and slightly swollen. There was no nasal discharge, lungs clear.

September 29th. Temperature, 101°F . Slight tenderness under the left costal margin persisted, but there was no acute pain.

September 30th. Temperature, normal. No pain or tenderness noted.

October 1st. Acute pain in the left side of abdomen, later centering around the umbilicus. Temperature, 102°F . The pain was intermittent colic in type, and the patient was unable to turn over. There was no nausea and the bowels were constipated.

Physical Examination—The patient was apparently acutely ill, suffering from considerable pain, colic in type. He lay with his legs drawn up and refused to move. The tonsils and pharynx were red and slightly swollen. There was no apparent glandular enlargement. The respiratory movements were limited. General abdominal tenderness and muscular rigidity were not at most marked in the area of the umbilicus. There was no particular tenderness over the area of the appendix. The remainder of the examination was essentially negative. The urine was normal. The white blood cells were 7,800 per c mm, with preponderance of polymorphonuclears.

During the afternoon the colic was less severe but the abdominal tenderness was more marked. The colour was poor and the pulse rapid.

Consultation with a surgeon resulted in a tentative diagnosis of acute appendicitis and operation was advised. At the operation the following points were noticed: an acute catarrhal inflammation of the peritoncum and peritoneal glands, and some swelling and inflammation of the appendix.

Following operation, the temperature remained elevated as high as 101°F and gradually fell to 100°F by the sixth day. During the first few days the patient appeared toxic, acutely ill, and complained a great deal of abdominal pain. Anorexia was marked. These symptoms gradually subsided, and, except for a small superficial wound abscess, his progress was uninterrupted.

I have since heard of several patients presenting histories identical with the above. A number were operated on for acute appendicitis. In one instance, one of twins was operated on, and a week later the other twin developed similar symptoms, but recovered without surgical intervention.

In 1925, Gerald Blake⁷ published a case-history of an adult with intestinal influenza, so called. The symptoms were severe chills, sweating, headache, muscular pains, diarrhoea, and elevation of temperature. A blood count showed 4,400 leucocytes per c mm. There was no evidence of respiratory infection. The author believed that patients with a mild form of this symptom complex had frequently been seen since 1919. He considered the diarrhoea to be of toxic origin, due to some organism which causes infection of the respiratory tract. He thought it the exception rather than the rule for these patients to show nausea.

A Luenheimer,⁸ of Munich, has described a sudden outbreak of alimentary intoxication during February and March. There were sixteen cases with five deaths. The main symptoms were, vomiting, diarrhoea, trembling of the extremities, a cerebral lacies, and no elevation of temperature. Cultures from the faeces were negative. One case was in an exclusively breast-fed infant. They occurred coincidently with an epidemic of influenza and the author considered them an intestinal form of this disease.

Alfred Alexander,⁹ of Berlin, in 1918 reported eight hundred cases of influenza. Twenty per cent of these patients had intestinal symptoms. In 1921 he described an epidemic of what he termed intestinal grippé. The symptoms and findings were given in great detail. All had diarrhoea with blood in the stools, and many patients were jaundiced. The duration of the illness varied from three days to several weeks. At autopsy the following pathological findings were noted, marked hyperaemia of the alimentary tract, especially in the oesophagus, stomach, ampulla and descending colon, where there were petechia. In one patient who had icterus, the papilla was markedly thickened and showed a large submucous hemorrhage. The gall bladder was full, its mucous membrane thickened, the liver was enlarged, and the spleen large and soft.

CASE 2

C. P., a boy aged 9 months, who was first seen on January 15, 1927.

Complaints—Colic, loose stools, vomiting, fever and fretfulness, of 24 hours' duration.

Family History—The mother was suffering from what she described as a "head cold."

Past History—The patient had been breast fed since birth, with the gradual addition of cereals, green vegetables, and potatoes, from the age of six months. On January 8th, cod liver oil had been started, and rapidly increased to a teaspoonful twice daily. He had had no previous illness.

Present Illness—On January 17, 1927, the patient slept longer than usual, and the mother thought he was not well. She reduced the feeding to breast milk only. After the 6 p.m. feeding he passed a loose watery green stool with considerable mucus, and later vomited twice. During the night he had frequent attacks of colic, and was given two simple enemas, which were returned with undigested food and mucus, no blood. Anorexia was not marked.

Physical Examination—The temperature was 100°F . The child appeared ill, was fretful, and objected to examination. The tonsils and pharynx were inflamed and slightly swollen. There was a very slight nasal discharge. Otherwise examination was entirely negative.

Impression—Acute rhinopharyngitis, acute gastrointestinal indigestion.

Feedings were discontinued for twelve hours and

water only given by the mouth. Breast feeding was gradually resumed. It was however several days before the stools were entirely normal and a regular diet could be resumed.

I have presented these cases, not because I believe them necessarily due to influenzal infection, but to serve as examples of what might be so considered. In the first case I thought there was a true influenzal infection giving very definite abdominal symptoms. In the second there are several possibilities. In the first place, it is possible that the intestinal upset may have been due to the rapid increase in the dose of cod-liver oil. This I feel satisfied does occasionally happen. Secondly, there may have been some parenteral infection, leading to an associated food-disturbance. Thirdly, it is possible that the infection may have been of an influenzal type, with gastro-intestinal symptoms.

SYMPTOMS

From a review of the literature it is apparent that only a few of the symptoms are a constant feature of the disease-complex termed "intestinal gripe." I shall rapidly enumerate those most frequently mentioned.

Pain—It is probably present in all cases. Most writers mention pains in the muscles of the neck, back and extremities. However, the more severe symptoms are abdominal. Here the pain is colic in type, localizing around the umbilicus, at which point the tenderness on palpation is maximal. It is intermittent, and gradually increases in severity as the illness develops. There are many explanations offered for it. James Burnett⁶ thought it might be due to an affection of the intestinal muscles as influenza is noted for its effect upon muscles. Usually in this disease the patient complains of muscular pains in the chest, shoulders and extremities. It also seems possible that the colic may be merely the result of some irritant within the intestine. Lastly, the findings, at operation, of catarrhal inflammation of the peritoneum and mesenteric lymph-glands suggests an easy explanation for this distressing symptom.

Fever—In the majority of cases there is some elevation of temperature, ranging as high as 104° or 105° F., in some instances. Occasionally, however, as in the sixteen cases of Uffenheimer,⁸ there is no pyrexia. Personally,

I should feel very doubtful of any case in which there was not at least some slight rise.

Anorexia—Very little mention has been made of this symptom in the literature. However, after discussing this symptom with several pædiatricians I have gained the general impression that it is marked at the onset of infection and often persists for some time afterwards.

Vomiting—There is a great difference of opinion in regard to this symptom. Many report it as occurring in all cases, and I believe it to be present in most where there is diarrhoea. One author considered it the exception rather than the rule.

Stools—All variations from marked constipation to extremely loose, watery movements with blood, mucus, and even pus have been mentioned by various observers. I believe the younger the patients the more liable they are to diarrhoea. Moreover, I believe it a good rule to regard all cases in which blood and pus are accompaniments of a diarrhoea as bacillary dysentery, until proved otherwise.

Jaundice—Several writers have mentioned this symptom in a number of cases, and one, G. Blake,⁷ directly associated influenza and infectious catarrhal jaundice. At present, it seems very difficult to believe that the cause of these two conditions is the same.

White Blood Cell Count—This has not been given much prominence. I could find but one instance in which it was mentioned, and there it was quoted as 4,400. If the infection is really influenzal in origin, we should naturally assume that there would be a leucopenia. However, I am not sure that this is constant.

Respiratory Features—In some of the cases recorded in the literature no positive findings are mentioned, in the majority, however, there has been inflammation of at least the upper respiratory tract. I have not seen any cases in which this was not present.

ETIOLOGY

The etiology is unknown. It is assumed by most writers to be similar to that of the true influenza, because the symptom-complex of intestinal gripe is usually found when this disease is prevalent.

PATHOLOGY

The pathological findings recorded in the literature are as follows: catarrhal inflammation of the peritoneum and mesenteric glands, swelling of Peyer's patches and the solitary lymph follicles, and occasionally hyperemia and swelling of the intestinal mucosa. One or two observers have recorded extensive intestinal hemorrhages.

SUMMARY

1 Influenza is at times attended by such marked intestinal and abdominal symptoms that numerous observers have come to believe in the existence of a gastro intestinal form of the disease, in which the primary seat of infection is intra-abdominal.

2 This so-called "intestinal gripe" has been more frequently observed in the very young than in the adult.

3 In many instances there has been no obvious involvement of the respiratory tract. Diagnosis has been based on the association with epidemics of influenza, and suggested by the generalized muscular pains.

4 Attention is called to the diagnostic difficulties presented by these cases. Numerous other etiological agents may give rise to similar disease-complexes. Among them bacillary dysentery, frozen milk, and parental infections of all types have been mentioned.

Pseudo or Transient, Arteriosclerosis.—E Moschowitz, New York, reports the case with autopsy of a man, aged 45, who entered the hospital with a typical acute or subacute glomerulonephritis, with signs of marked impairment of kidney function. As the radial arteries felt much thickened a diagnosis was made of acute glomerulonephritis on the basis of an old arteriosclerosis with chronic nephritis. The disease ran a rapid course, and death occurred in three and a half weeks after admissions. At autopsy, a subacute glomerulonephritis was found with an aorta that did not show any gross evidences of arteriosclerosis. Moschowitz says that in the course of acute glomerulonephritis, the radial vessels afford a sensation of thickening so that the clinical diagnosis of "arteriosclerosis" is often made. If the patient recovers, this feeling of thickening disappears a few weeks after disappearance of the increased intravascular tension associated with the nephritis. This feeling of thickening is the result of two factors: (a) the hypertension itself, and (b) the hypertrophy of the muscular coat consequent to the hypertension. The second factor is the dominant one. When the hypertrophy subsides, the feeling resembling that of arteriosclerosis disappears. In the case here reported, the aorta was found at autopsy to be normal. A recognition of

5 No typical pathological findings have been recorded.

CONCLUSION

There is no evidence as yet sufficient to warrant us in accepting the existence of a gastro-intestinal form of influenza, in which the primary seat of infection is intra-abdominal in origin. If true intra-abdominal infection with the organism of influenza does occur, it is safer to regard it as a complication or sequela of a respiratory infection. Obviously, however, the whole question must remain an open one until there is a more exact knowledge concerning the micro-organism responsible for influenza.

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Treatment for Split Finger Nails.—W W Carter, New York, reports the case of a girl, aged 18, who had a split nail on the middle finger of the right hand, the split had reached almost to the root of the nail and had resulted from an injury to the finger six years before. As the nail grew out, the apex of the slit would remain at about the same place. The adviser her to let the nail grow about three eighths inch beyond the end of the finger and then to return for treatment. He then made a drill from a cambric needle and with this made three opposing holes on each side of the slit. He passed sutures through corresponding holes and drew the edges of the nail as close as possible. The finger was then bandaged for protection. As the nail in growing protruded the distance between two of the sutures, the distal end of the nail was pared and another suture placed near the end of the finger. This process was kept up until the apex of the slit was well beyond the end of the finger. A complete cure was effected in six weeks and after the lapse of three years the nail is perfectly normal—*J Am M Ass*, May 19, 1928, xc, 1619.

GENERAL ANÆSTHESIA IN OTO LARYNGOLOGY FROM THE STANDPOINT OF THE SURGEON*

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THE purpose of these remarks is to give an idea of some of the mechanical factors which may interfere with the administration of anæsthetics in the more common operations of oto-laryngology and to suggest ways of dealing with them. A few general statements will be added.

There is no reason why anæsthesia should be different in this branch of surgery. There is however an important qualification where the throat surgeon is concerned. He must be particular in having good anæsthesia, because he is working in areas through which breathing takes place, on tissues which are very susceptible, and which vary greatly with the condition of the patient. The safety of the patient and the quality of the operative work, are in great measure dependent upon the character of the anæsthesia. The danger to the patient and awkwardness to the surgeon caused by imperfect anæsthesia are hardly appreciated by the anæsthetist. A state of unconsciousness with or without partial asphyxia, may do for an operation on an extremity but it will never do for an operation on the throat. Congestion of the tissues will make any operation more difficult because of the excessive bleeding. Too deep anæsthesia may ruin a bronchoscopic or œsophageal procedure. What is needed is good anæsthesia to the surgical degree no more, no less, anæsthesia into which the patient has been directly induced in which he has a free airway, breathes regularly and properly, has no undue increase in blood pressure, and his tissues are relaxed and in a state of good tone. There is an art in producing this.

Failures to obtain perfect anæsthesia may be the result of faulty administration. But, a most important cause, and one which is so frequently overlooked, is that of failure to

provide for, and failure to maintain, an adequate airway. Without proper breathing it is impossible to have proper anæsthesia. The throat surgeon is in a position to recognize as they occur, the various causes, and types of obstruction in the airway, and should be ready at any time to help in rectifying them.

An obstruction may already exist in the airway, or it may arise during the course of the anæsthetic from (1) the collection of secretions or blood (2) relaxation of the tissues, (3) spasm, (4) certain combinations of these factors.

The nose is the natural channel for breathing, and is so used, instinctively, from birth. It at any time, however, the lumen is not sufficient, the individual consciously opens his mouth to make up the deficiency. In the act of going to sleep, when the patient loses consciousness, the mouth closes, and forced breathing takes place through the nose. In this way a state of cumulative asphyxia is set up which, sooner or later, according to the degree of obstruction, awakens the patient. During the induction of an anæsthesia, the same process occurs, except that it is complicated by the anæsthetic, and the individual is prevented from awakening. To continue the anæsthetic under these circumstances is inexcusable. Therefore, in any case of organic nasal obstruction, or when the nose has been packed, it is essential, before beginning, to provide some means of continuing the airway through the mouth. A piece of hard rubber, attached to a string, placed between the teeth at one side, or a mouth gag slightly open, will effect this. Often in infants, and sometimes in certain types of adults, this is not sufficient, because the large and powerful tongue seems to fill the whole mouth and most of the oral larynx. A small, suitably curved airway, placed to reach the lower part of the oral pharynx may be necessary.

In the pharynx there may, occasionally, be large, pendulous tonsils, which are drawn down

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in inspiration and act as a ball valve. This may be remedied by holding up one tonsil with a tenaculum forceps.

Saliva may collect in the pharynx, more often at the beginning of the anæsthetic when the ether induction is slow. It may act in a reflex way, causing partial closure of the glottis with coincident shallow breathing or it may collect until there is an actual obstruction. This saliva can be bled out with a tongue depressor, and allowed to run out, by turning the head to one side and depressing the lower side of the mouth and cheek, or, suction may be used. If there is no machine, a reversed rubber syringe will do just as well, but to be of any value, the tip of the suction tube must reach the lower pharynx. The best way, however, is not to allow it to occur. The cause usually lies in faulty administration.

When relaxation sets in, the most common type of obstruction is that caused by the falling back of the tongue into the pharynx. The lower jaw, widely opened by a mouth gag presses the tongue backwards and makes the condition worse. Some manoeuvre which will hold the tongue forward is necessary, such as, (1) Extension of the head. (2) Holding the lower jaw forward by the chin or by the angle of the jaw. (The pain afterwards is often bitterly complained of by the patient). (3) Holding the tongue forward by forceps, or by any other means. (This has the same objection as in No. 2). (4) The lower jaw held forward by a twisting action of the mouth gag. (5) By a curved metal airway. (This is not altogether satisfactory, because the curve is not right and there is no lifting action).

None of the above methods may be quite satisfactory. The best way is to lift forward the back of the tongue and epiglottis by a spatula, using the upper incisor teeth or the jaw as a fulcrum. It would be very easy to design such an instrument to include an opening at the mouth, with a handle in loop form to surround the nose. In an emergency, the blade of a metal tongue depressor can be slipped down, and the tongue held forward.

A rare accident when using ethyl chloride is to have the epiglottis drawn down and sucked into the larynx, at the beginning of a forcible inspiration. This needs immediate attention, and can be rectified by running the finger over

the back of the tongue and pulling up the epiglottis.

Partial shutting off of the larynx commonly occurs, and occasionally there is a complete spasm. This is usually caused by forcing the ether when the patient will not tolerate the concentration. If the closure is slight, it may not interfere with the patient going under. It is often brought on by administering an ether mixture too soon. The superfluous vapour is very irritating to the surgeon, and for short operations, this mixture might be dispensed with. If the closure is marked, it is better to stop the anæsthetic until the breathing becomes free and regular, then to gradually work up to concentration.

Secretions allowed to collect in the pharynx may overflow, and be drawn into the larynx and trachea, causing at first a certain amount of spasm of the larynx, and later, will, with the addition of mucus be churned up in the trachea and act as an obstruction. There are characteristic sounds associated with this condition from which it is obvious that the patient is not breathing well. Under these conditions it is dangerous to proceed with the anæsthetic. By intubating with a suction tube, this condition might be relieved, but an easier way, and one which may save time in the end, is to let the patient come out far enough to cough it all up. He will then go under readily.

If stenosis, or obstruction by a foreign body, should exist in the larynx or trachea, to such an extent that any extra excitation brings on cyanosis, it is very dangerous to use anything that will excite the patient, or increase the respiratory exchange in rate or volume. Ethyl chloride and ether should not be used. It is in such cases that the induction of anæsthesia by chloroform, given sparingly and carefully is of great value, but the administration in these cases should be guided by the surgeon.

Intra-Tracheal Anæsthesia—This is unquestionably of great use in certain cases. A single tube however, has disadvantages, as a free passage for the return flow must be provided, and it does not prevent secretions or blood from getting into the larynx and trachea. It may, on the contrary, make a nice track for them. The pharynx should be kept clear of any such accumulations. Often the patient is only slightly under, the blood pressure is high, and

bleeding takes place very readily. This is a great disadvantage, especially in a septum operation.

The metal airway, with insufflation tube attached, is a very good substitute. It is simple, easily introduced, provides an airway through the mouth and pharynx, and can be used in many cases with great satisfaction.

Clothing—It is important to see that the patient is suitably clothed. An excess of covering interferes with the natural and proper elimination of heat, and may be of harm to the patient.

The use of the rubber sheet over the eyes seems unnecessary. Capillary attraction between the rubber and the surface will draw up ether over the eyes. Intense conjunctivitis has sometimes resulted. A careful anaesthetist will never allow an excess of ether to run off the mask.

If the breathing becomes infrequent and shallow, it may be due to a condition of apnoea, following too forcible and rapid breathing, or it may be due to respiratory failure.

If artificial respiration be called for, it is essential to watch for any efforts at breathing, and to help them along, always keeping in the same rhythm. Ill-timed action may stop them entirely.

When the anaesthetist is late in starting, it is not fair to the patient to force the anaesthetic, besides, it usually results in poor anaesthesia, which causes greater delay. When the patient is not in a satisfactory condition, it is not fair to the surgeon to tell him that he may start the operation. If there be any departure from the normal, an analysis of the situation is advisable, so that the trouble may be rectified at once.

In conclusion, may I state that the surgeon should know something about anaesthetics, should know what he wants, and how to get it. And in turn, the anaesthetist should know something of the surgical technique of the throat. I can think of no better preliminary training for an anaesthetist than an internship, or its equivalent, on a throat service. He would get an idea of the anatomy, physiology, and pathology of the breathing passages. He would become familiar with the ordinary manipulations on the throat. He would learn the mechanics and dangers of anaesthetics, how awkward it is to work with poor ones, and how different it is to work with good ones. He would then be in an advantageous position to acquire the art of the perfect anaesthetist.

ANÆSTHESIA IN NOSE AND THROAT SURGERY, FROM THE STANDPOINT OF THE ANÆSTHETIST*

BY SAMUEL JOHNSTON, M A, M D, F A C P

Toronto

THE day has passed when a nose and throat operation is looked upon as a trivial affair. Experience has taught us that a patient about to undergo an operation on these parts, or even on the tonsils alone, must be as carefully prepared as for any major operation. Especially is this true with regard to adult patients, to whom the surgical shock may be as severe as in any so-called "major" operation. This is also the case from the standpoint of the anaesthetist.

The anaesthetist has before him one crucial problem, the safety of the patient, and to this end should co-operate with the surgeon in

administering an anaesthetic with a surgical degree of narcosis and necessary muscular relaxation. There is no branch of medicine in which personality counts so much as in anaesthesia. This applies not only to the anaesthetist's attitude to the patient, but also in his dealings with the surgeon, physician, or any one with whom he is working. He should be possessed of a mind open to any valuable suggestion offered, or to fair criticism made, without feeling any resentment.

Previous medication for adults is an important factor in nose and throat anaesthesia, unless of course, there is some contra-indication to its use. I have found it of great assistance, especially with nervous patients. Morphine $\frac{1}{4}$ gr, with atropine $\frac{1}{150}$ gr or $\frac{1}{200}$ gr ad-

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ministered one half hour before operation, or morphine $1\frac{1}{4}$ gr, atropine $1/150$ gr, hyoscyne $1/200$ gr, administered three quarters of an hour previous to operation meet the requirements of most cases.

The induction of anæsthesia is much the same for all types of surgery. Most anæsthetists induce anæsthesia with ethyl chloride and sustain this with ether. Some use ether or a mixture of chloroform and ether, while others use nitrous oxide and oxygen for induction. There are some cases in which nitrous oxide and oxygen should be given throughout, as diabetes, pulmonary tuberculosis or acidosis. It is not the most satisfactory anæsthetic for routine work, though it is used considerably in some clinics. The most important points to be considered in the use of nitrous oxide and oxygen are the skill of the anæsthetist and the complete co-operation of the surgeon. However, unless contra-indicated, the ideal anæsthetic for sustaining narcosis in nose and throat surgery would seem to be ether.

While one should never allow himself to be hurried in the induction of anæsthesia, one finds that the more quickly he can get a patient into the surgical stage of anæsthesia, with safety and comfort, the better will be the type of anæsthesia. This is specially important in nose and throat operations for the following reason, the longer you take to anæsthetize your patient, the more saturated all the tissues of the body become, and the reflexes will be correspondingly slow to return, whereas, the cough reflex should return as soon as the operation is completed. If the patient is saturated, he may inspire some of the blood and mucus, laden with all kinds of bacteria from the nasal and buccal tracts, and the results may be disastrous, as exemplified in lung abscess or pneumonia.

Once surgical anæsthesia has been established, the insufflation and suction method is generally used. Care should be taken to keep the suction tip as near the median line as possible, as it is very annoying to the surgeon to have it continually in his way. Another thing to be avoided is the uvula, if the suction tip comes in contact with the uvula, it quickly produces œdema.

Insufflation anæsthesia is best accomplished by passing a catheter through the nose to the

nasopharynx. Care should be taken not to have too great pressure, as blood may be forced into the trachea. In nasal operations, where the insufflation method is employed, a metal mouth airway is used, to which the insufflation tube is attached.

Many nasal operations are better done with intra-tracheal anæsthesia. Here, some experience is necessary before the catheter can be passed with ease. Complete relaxation must precede this method or difficulty on account of spasm will be experienced in introducing the laryngoscope. A double catheter may be used with advantage, attaching the insufflation tube to one and leaving the other for expiration. When the two tubes are used, it is advisable to pack some gauze down around these tubes, to prevent any possibility of blood or mucus entering the trachea. The second tube tends to make intra-tracheal work much safer. It is better to have the exhaust tube a size larger than the insufflation tube. This second tube has another advantage in prolonged operations, as a long rubber tube can be attached to it and thus the ether is carried completely away from the field of operation. In this way, the surgeon is not hampered by the ether being blown into his face. McGill, of London, has devised a tube which consists of two separate tubes joined together about two inches from the distal end, the supply tube extending an inch further than the exhaust tube. This has an advantage over the two single tubes, as often, after one tube is passed into the trachea, a spasm is caused which makes the introduction of a second tube difficult and sometimes impossible. One must keep in mind, however, the dangers of the intra-tracheal method. Experience has shown that a slight degree of positive pressure is not dangerous, but high or long-continued pressure may result in serious reflex disturbances in the lungs, and deleterious effects upon the circulation, depending upon the reserve power of the right ventricle. Positive pressure sometimes produces numerous disturbances in normal circulation in the lungs, such as reflex compression of the lung capillaries. (Sauerbruch.)

In bronchoscopic work, difficulty is sometimes encountered in sustaining smooth inhalation anæsthesia. When the bronchoscope is in position, an insufflation tube cannot be passed,

owing to obstruction of the view, so that a straight metal tube must be resorted to, which is attached to the insufflation tube and the current of air is directed into this tube. Although this is quite easy to accomplish for short operations, it is much better in prolonged cases, such as when searching for a foreign body, to induce and sustain anaesthesia *per rectum*.

It is impossible for a surgeon to do good work in nose and throat operations, unless the anaesthetist is able to maintain complete relaxation of the muscles of the throat during operation. This also lessens the danger of hæmorrhage. In this type of operation, the narcosis should be of such a degree that the palate and faucial arches are flaccid and there should be no reflex spasms of the pharynx. In order to obtain this, one must have free ventilation of the lungs from start to finish. One must recognize what free breathing is. Too often the anaesthetist is satisfied if the patient is snoring or making a noise with each respiration, or if the colour is fairly good. This is not sufficient. One must have a perfectly free airway with the colour better than normal. If this care is not taken, one may have saliva and mucus, and, gravest of all, partial asphyxiation instead of anaesthesia.

Having regard to the essentials of anaesthesia in nose and throat surgery, we now come to a few minor details. The patient can be placed in almost any position convenient for the surgeon, though the present day consensus of opinion is, that the recumbent position is the most desirable. It is essential that the patient should be made comfortable previous to the

administration of the anaesthetic, allowing him to go to sleep in any desired position. It is an easy matter to re-arrange this after he is anaesthetized.

On the completion of the operation, the patient should be placed on his side, so that if there is any oozing, it will drain from the angle of the mouth. Also in this position, the tongue is not so likely to fall back and obstruct the breathing. Another thing, a patient should not be allowed to leave the operating room with damp clothing, and some competent person should remain constantly with him until consciousness has returned.

After nasal operations where there is packing in the nose, either a mouth-gag or metal airway should always be placed in position until the patient has recovered sufficiently to breathe naturally. Personally, I prefer the airway, as it prevents the falling back of the tongue and lessens the danger of injury to the teeth.

In conclusion, may I say that, though anaesthesia has travelled a long, hard road since Voltaine said, "A physician is one who pours a drug of which he knows little into a body of which he knows less," we do feel encouraged to go on in the light of present day achievements in this art. Its future development can only be left to the imagination when we take into account the vast amount of research work being done along this line. It would seem that the age of "blunder and luck" has passed away forever, and we have reached the goal of safe anaesthesia for surgery.

Endometrial Tumours in Abdominal Scars—Endometriosis occurs in abdominal scars by direct transplantation of endometrial cells, which after a varying latent period form small tumours in this new habitat. The frequent occurrence of these lesions after uterine suspension or fixation of various types suggests the advisability of care in using traction sutures perforating the uterine wall as a method of elevating the uterus, and of protecting as thoroughly as possible the wound edges and peritoneal surfaces when the uterus is incised or punctured by instruments. Even salpingectomy with resection of a wedge of uterine muscle at the cornu may scatter viable endometrial cells which may become implants. Implantation endometriosis in caesarean wound scars is remarkably rare and suggests lower viability and a slighter tendency toward growth in the endometrial cells during pregnancy than during the non pregnant state.—Marion Douglas, *J Am M Ass*, June 9, 1928.

Menstruation and Menstrual Disorders—Emil Novak, Baltimore, urges caution in the therapeutic application to human patients of the results recently obtained through studies in animals, valuable as these studies have been. His own results with folliculin therapy have left him doubtful of its efficacy, and this seems to have been the experience of others as well. In cases of hypofunction of the ovary, particularly in amenorrhœa, it would be surprising if follicle injections in themselves were successful in restoring menstruation. It is much more rational to mimic what is believed to be the normal sequence of events, and to give a series of injections of follicle substance, followed by a series of injections of lipid containing corpus luteum extract. Novak's only encouraging results have been with this plan of treatment, which he believes to be far more rational than the injection of either follicle substance alone or corpus luteum extract alone.—*J Am M Ass*, Feb. 4, 1928.

A NOTE ON THE OUTBREAK OF RABIES IN THE KINGSTON DISTRICT

By W. D. HAY, M.A., M.D.,

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IN the June number (1928) of the *Public Health Journal* Drs. Seymour and Bell gave a brief review of the rabies situation in Canada. The Dominion was entirely free of the disease from 1917 to the fall of 1925 when at the close of the hunting season it appeared first in the Ottawa district. During 1926, cases occurred in the counties of Russell, Dundas, Lanark, Renfrew, Grenville and Leeds. Then another outbreak of the disease took place in the Sharbot Lake district in the northern part of the County of Frontenac, in the autumn of 1927.

On February 12, 1928, a farmer in the Perth Road neighbourhood, thirty miles north of Kingston, reported to the Veterinary Inspector that a strange dog had appeared in the vicinity, and that it was roaming from place to place fighting with every dog it encountered. The dog was shot and the head was sent to the Kingston Branch Laboratory where the brain was found to contain numerous Negri bodies. It is of interest to note that the dog had broken most of its teeth during its period of madness.

The Federal Inspectors investigated the case but they were unable to find the owner until a month later when several contacts had died of rabies. Although no mad dog was known to have entered the City of Kingston, three animals developed symptoms of rabies on the 14th and 15th of March. One was proved to be positive on laboratory examination. The second left the city and killed a number of sheep on a farm about five miles west of Kingston. One sheep which was lacerated about the head developed rabies a month later and its brain was found to contain numerous Negri bodies. The third dog showed symptoms of the dumb type of the disease. It died, and was destroyed without laboratory examination.

The Veterinary Inspectors at once proceeded to induce the various township authorities concerned to pass quarantine regulations. The co-operation of the Kingston police soon checked the spread of the disease in the city, though several dogs developed symptoms of rabies

during April, and two were proved rabid by laboratory examination. The conditions, however, were not so satisfactory in the country districts. The quarantine regulations were passed by the various township councils, but, it was difficult to enforce them. The Federal Inspectors did their utmost to get the co-operation of the people, but it was not until the outbreak became really serious that they received the necessary assistance.

One child was badly bitten on the face by a dog which was proved rabid by microscopic examination. Treatment was begun four days afterwards. Twenty-one doses of vaccine were given and the child remained well. About the middle of April the disease appeared in a number of herds of cattle. Several farmers lost heavily in this way. The head of one animal from each herd was sent in for laboratory examination, and in five cases they proved positive.

One interesting example of the way by which dogs spread the disease may be given. A collie from the Kingston district entered the town of Napanee one evening. A lively fight occurred on the street, and a month later seven dogs died of rabies, four of them came from residences within a hundred yards of where the fight took place.

The important points about the epidemic were first, that the disease gained widespread distribution before the co-operation of the public was enlisted sufficiently to have the dogs effectively tied up. No case of hydrophobia occurred in the human subject. This was probably in large part due to the efficient use of vaccine, prepared according to the Semple method by the Connaught Laboratories and distributed free by the Ontario Department of Health. Fifty persons who had been bitten, or had been in contact with rabid animals, received treatment at the Kingston General Hospital. No severe reactions followed the use of the vaccine, though a few individuals complained of slight malaise and urticaria between the seventh and tenth days after the commencement of the treatment.

Case Reports

CASE OF SPONTANEOUS RUPTURE OF THE HEART*

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Cases of rupture of the heart with consequent hæmopericardium are by no means common. They may be divided as regards their causation into traumatic and spontaneous. The former are the more frequent, and are due to penetrating wounds by knife or bullet, or to crushing of the chest. In the former the injury to the heart may be anywhere, in the latter it is usually a tear in one of the auricles.

Spontaneous rupture may be due to various causes. Very rarely, it may occur in a practically healthy heart. We have seen it as a result of overdistension in sudden, violent exertion, and also during the administration of an anæsthetic. In both instances it was the right auricle which gave way. In most cases, however, the heart muscle is the seat of some gross pathological change. The commonest of these pathological conditions is degeneration, the result of obstruction to the lumen of the coronary artery. Usually the coronary artery is the seat of atheroma with narrowing of the lumen and thrombosis on a diseased patch. Only in very rare instances is the obstruction due to embolism. The degenerative changes which occur are fatty degeneration, necrosis and fibrosis, occasionally complicated by an aneurysm of the heart, rupture occurring in the sac of the aneurysm.

In virtue of the fact that it is the anterior descending branch of the left coronary which is most commonly the seat of atheromatous disease, the rupture is usually found in the distribution of this artery, *i.e.*, on the anterior wall of the left ventricle near the apex. It is also in the area supplied by this vessel that aneurysms of the heart wall are usually found. We have seen one case in which the rupture occurred in the posterior wall of the left ventricle, *i.e.*, in the area supplied by the

posterior descending branch of the left coronary.

Less frequent, as a cause of rupture, is acute inflammatory disease of the myocardium. We have seen it as the result of an embolic abscess in the wall of the left ventricle, in a case of acute osteomyelitis in a child.

Lastly, as a cause of spontaneous rupture, there is fatty infiltration of the heart wall. In such a case the rupture is found in the anterior wall of the right ventricle. Robert Murray figures such a heart in his text-book (p. 262) and the underlined case is probably due to the same cause.

CASE

The case was that of a woman, aged 77, who was admitted to the Kingston General Hospital on October 3, 1927. She had always been well until two years previously, when she had a stroke. After this her right side was crippled, and she had a good deal of difficulty in getting about. Three days before admission she had complained of severe pain over the stomach and in the left hypochondrium.

Examination at the time of her entrance to hospital showed some irregularity in the action of the heart due to extra systoles. The heart was slightly enlarged, the apex beat being in the fifth interspace, $4\frac{1}{2}$ inches from the mid-sternal line. The pulse was 88, and the blood pressure, 160 systolic, 80 diastolic. The vessels throughout were thickened. Pain was still present at the time of admission and there were two subsequent anginal attacks, the first on December 14, 1927, the second on the day of her death.

At four p.m., on February 28, 1928, the patient was seized with intense agonizing pain in the region of the upper epigastrium. She became restless, cyanosed and faint. There was vomiting, and the pulse was feeble, rapid and irregular. In spite of treatment, she sank into unconsciousness and died at 8 p.m. on the day of the attack.

The case, clinically, was thus one of arteriosclerosis and cerebral hæmorrhage, exhibiting

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a series of heart seizures diagnosed as due to blocking of branches of the coronary artery

The post-mortem examination was performed the morning after the patient's death, and showed the following

The pericardial sac was filled with fluid and clotted blood. A small ragged tear was present in the anterior wall of the right ventricle near the apex and close to the interventricular septum (Fig 1)



FIG 1—View of the heart lying on its posterior aspect, taken from the right. The wall of the right ventricle is loaded with fat. An oblique incision has been made through the muscle and below this is the ragged tear to which the arrow points

The heart weighed 450 gm. All the cavities were dilated and contained blood clot. The wall of the right ventricle was loaded with fat and showed, microscopically, penetration of the adipose tissue between the bundles of the muscle fibres (Fig 2)

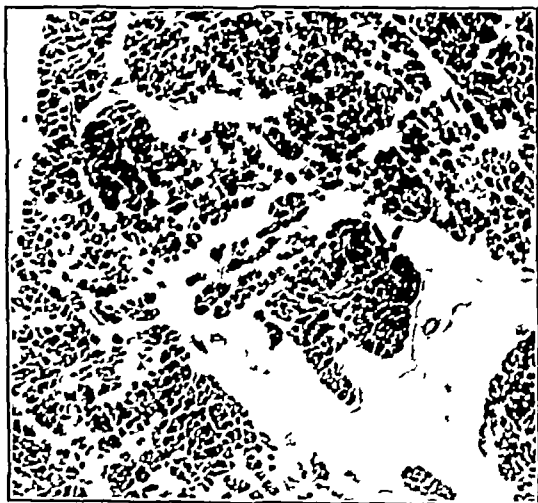


FIG 2—Low power view of the wall of the right ventricle, showing bundles of muscle fibres broken up by infiltration with fatty tissue

The left ventricle contained a recent thrombus attached to the interventricular septum near the apex. The muscle had a mottled appearance, and showed, microscopically, large fibrous scars, with bundles of muscle fibres in a state of fatty degeneration and necrosis (Fig 3)



FIG 3—Low power view of the wall of the left ventricle, with fibrous scars (pale areas) and bundles of muscle fibres showing fatty degeneration and necrosis

The mitral and aortic valves manifested a condition of chronic endocarditis

The coronary arteries were thickened throughout, and the anterior descending branch showed a thrombus blocking its lumen. Microscopically, there was thickening of the intima, with fatty change and fibrillation of the internal elastic lamina

There was dropsy of both pleural sacs, and partial collapse of the lungs, which showed evidence of old healed tuberculosis

The liver, spleen and kidneys showed chronic venous congestion. There was a small parovarian cyst on the right broad ligament, and the gall bladder contained a small mulberry stone

COMMENT

We have, then, a case of arteriosclerosis with a history of a cerebral hæmorrhage, developing a series of heart attacks, associated with pain in the epigastrium, in one of which the patient dies. Blood is found in the pericardial sac, and a small tear is present in the anterior wall of the right ventricle. The heart muscle in the near neighbourhood shows fatty infiltra-

tion, so that it may be assumed that the rupture was due to this somewhat rare cause. There were, in addition, obstruction to the descending branch of the left coronary, and fatty degeneration, necrosis and fibrosis of the muscle of the left ventricle. Thus, all the conditions were present which usually accompany rupture of the left ventricle, and the curious thing was that the heart did not burst at this point. The actual point of rupture was an area of muscle weakened by invasion with adipose tissue. The violent and irregular contractions of the muscular organ, accompanying blocking of a large branch of the artery of supply, no doubt precipitated the rupture at the weakest point, *viz*, the anterior wall of the right ventricle.

The case emphasizes the ease with which cardiac pain may be mistaken for gastric pain, especially when, as in this instance, the pain was accompanied by vomiting. We have seen in a case of the kind a diagnosis of acute indigestion made, and death put down to this cause.

DIABETES, ARTERIOSCLEROSIS, AND GANGRENE*

BY EDWARD H. MASON, M.D.,
Assistant Professor of Medicine,
McGill University,
Montreal

At this time it seems appropriate to bring before the members of the profession, and especially before the surgeons, the results that are being obtained in the treatment of the gangrene which so frequently occurs in diabetics. Formerly, the occurrence of gangrene in the diabetic resulted in surgical interference of a radical nature in a large percentage of the cases. Today, the possibility of avoiding such interference is much greater.

During the past two years, twenty-four cases of diabetes mellitus with gangrene have been admitted to the Metabolism Clinic of the Royal Victoria Hospital. Two of these cases died within a few hours of admission. Of the remaining twenty-two cases, fourteen had extensive gangrene of one foot, while in eight the gangrene was confined to one or more toes. In five

of the fourteen cases that had gangrene of a foot complete cure of the gangrene was obtained by medical means alone, the remaining nine having amputations. Of the eight cases that had gangrene of one or more toes a complete cure without surgical interference was effected in five, while the other three had a local amputation only of the toe affected.

In this small series 36 per cent, therefore, were cured without surgical interference when the gangrene involved the foot, and 63 per cent were likewise cured when the gangrene involved one or more toes only.

These results I consider to be representative of what can be done with gangrene in the diabetic, and indicate the conservative attitude that the profession should adopt in dealing with such cases.

CASE REPORT

The present case is that of a woman of sixty-one years who was primarily admitted to the Royal Victoria Hospital on February 2, 1927. Three months before admission when cutting a callus on the sole of the right foot blood was drawn. Shortly, swelling and pain in the part appeared. Gradually the swelling involved the whole foot as well as the lower third of the leg. In a few days the whole limb was reddened, warm, and tense.

Upon admission, there was a discharging ulcer on the plantar surface of the foot, and the cellular planes were extensively infiltrated with pus. Lymphangitis extended well up the leg. An incision was made, and through and through drainage established. Examination of the urine revealed marked glycosuria, a finding previously unknown to the patient. With the administration of insulin the blood sugar rapidly fell to normal, and the spreading infection became arrested (see Table I). Subsequently it was necessary to establish more complete drainage, but the foot healed progressively.

This involvement of the right foot was not true gangrene, but extensive infection. Since palpable arterial pulsation was present in the foot I was optimistic from the onset as to the outcome.

Leaving the hospital in April, 1927, our patient continued to follow her diet and take her necessary forty-four units of insulin per day until August. Then for financial reasons she

* Presented at a meeting of the Montreal Medico-Chirurgical Society, March 16, 1928.

TABLE I—DIABETES MELLITUS WITH GANGRENE

Mrs J A, Age 60

Date	Diet			Urine Sugar	Blood Sugar		Insulin	Remarks
	Protein	Fat	C H O		Fasting	Digestion		
1927	gm	gm	gm	gm	per cent	per cent	units	
Feb 2nd		Softs		+++			0	<i>First Admission</i> Surgical—Gangrene of right foot Incision and drainage (1)
" 5th	56	95	56	+	0 300	0 326	20	
" 6th	28	47	28	0	0 113		15	
" 7th	19	32	19	0	0 096	0 069	35	
April 16th	60	180	70	0	0 186	0 112	14	Incision and drainage (2) Discharged
1928								<i>Second Admission</i>
Jan 22nd	One meal only			+++				Gangrene of left foot
" 23rd	36	113	39	5 7	0 268	0 079	35	
" 24th	30	90	35	0		0 095	20	Incision and drainage
" 25th	60	120	70	0	0 120	0 083	31	
Mar 12th	60	180	70	0	0 142	0 148	36	

was forced to discontinue the insulin. The diet was continued.

At Christmas time prickling sensations developed in the sole of the *left* foot. A gangrenous patch rapidly developed upon its plantar surface, and the second toe became discoloured. When admitted on January 22, 1928, the whole foot was swollen and there was a purulent discharge from the large gangrenous patch upon its plantar surface. The second toe was almost black, and the inflammation extended well up the leg.

Examination indicated that the circulation of this leg was much impaired. No palpable pulsation in the foot could be felt, and an x-ray showed rather extensive calcification of the arteries, both in the leg and in the foot. The findings were so formidable that the surgeon in consultation advised immediate amputation (See photograph).

With strict control of the hyperglycæmia and glycosuria immediate improvement followed. This improvement has continued progressively until the plantar gangrenous area was almost replaced by healthy granulation tissue and the dead toe ready to drop off.

TREATMENT

In the treatment employed, rest and warmth, with strict control of the diabetic condition through diet and insulin, were regarded as essential. Patience and persistence came next. Moist dressings should be avoided in all cases of diabetic gangrene. As accessories we have used passive daily elevation and lowering, and in some cases voluntary exercise. Ultra-violet light, both general and local exposures, have also been employed, but we do not consider that these accessories were of fundamental importance in the results obtained. That healing and the formation of granulation tissue must depend upon the development of collateral circulation would seem evident. That such compensatory circulation can develop with time, even when the larger vessels of the leg and foot show marked calcification, is the lesson to be remembered from our experience of the past two years.



Plantar surface of the left foot, showing large gangrenous area which healed progressively by medical treatment. (Photo on February 12, 1928)

A CASE OF CHORIOEPITHELIOMA*

BY ELEANOR PERCIVAL, M.D.

Montreal

Mrs McK, aged 34, was admitted to the gynaecological service of the Montreal General Hospital on July 6, 1926, complaining of vaginal bleeding which had continued for ten weeks. Her previous menstruation had been normal. She had been pregnant five times, the first, middle and fifth pregnancies ending in abortion between the third and the fifth months. The last miscarriage occurred at five months, in December, 1925. Following this, she had amenorrhœa, until the bleeding which caused her to seek advice began in May, 1926.

On admission, the uterus was found to be the size of a three months' pregnancy, and characteristic small, white, cystic masses were noted in the bloody discharge. Under anaesthesia, the uterus was explored with the finger and a cupful of small cysts removed. Pathological sections showed a benign hydatid mole.

The patient menstruated normally in July, but on August 16th, bleeding recurred, and continued until her re-admission on September 13, 1926. A curettage done two days later showed the uterus to be three inches deep, and with the curette a small amount of normal endometrium was obtained. Three weeks after this, bleeding began again, but this time it was much more profuse than formerly. She was re-admitted on November 29, 1926, and a hysterectomy performed. Sections of the uterus showed no abnormal tissue.

From this time on, the patient gradually failed, losing thirty-three pounds during the following nine months. In September, 1927, she was admitted for the fourth time, complaining of vomiting, palpitation, pain in the right lower quadrant, and sleeplessness. Examination showed a markedly dilated heart, normal chest, the liver enlarged to three fingers-breadths below the costal margin, and the pelvis filled by large cystic masses which were movable and about the size of two large oranges. The pelvic mass did not suggest malignancy, nor were there any nodules palpable in the vagina. The patient gradually failed and died on September 22, 1927.

At autopsy, hæmorrhagic, friable masses were found in the liver, which was greatly enlarged, also on the right anterior chest wall, at the base of each lung, on the mucosal surface of the jejunum, and in the pancreas. The pelvis and vagina were clear of these hæmorrhagic masses, but two large benign multilocular cysts were present.

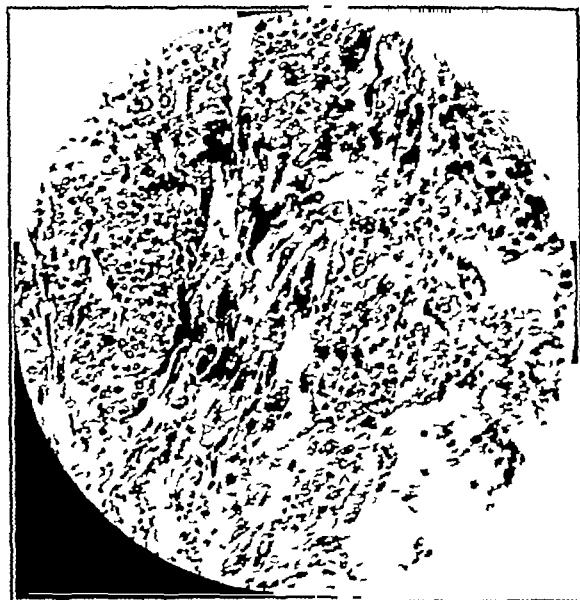


FIG 1—Section from metastatic growth in liver showing the two types of cells.

Microscopically (Fig 1), the tumour masses were made up almost entirely of broad, irregular, anastomosing strands of the two types of chorionic epithelium. The Langhans' cells were distinguished by their smaller, more regular form, with clear protoplasm and fairly sharp cell outline, while the syncytial material formed solid areas, which stained more deeply and in which numerous nuclei were embedded. The cells grow diffusely with no orderly arrangement. The stroma and newly-formed blood vessels were inconspicuous. In one section, tumour material was seen within the lumen of a vein (Fig 2). No villi were seen in any of the sections. In the Langhans' cells, mitotic figures could be seen, and it will be noted that the Langhans' cells were not sheathed everywhere by syncytium as in the normal placenta.

The tumour was, therefore, a rapidly growing malignant one, developing from the epithelial elements of young placental tissue—a "chorioepithelioma". A ripe placenta, *i.e.*, one with mature villi, never becomes malignant.

* From the Gynaecological and Pathological Services of the Montreal General Hospital.

COMMENT

Chorioepithelioma may follow hydatid mole, abortion, or pregnancy. About 8 per cent of all hydatid moles undergo malignant degeneration, but a history of a mole is given in about 50 per cent of cases of chorioepithelioma. Women who have had five or more pregnancies are most susceptible to the growth. The average age incidence is 33 years.

The tumour was first clearly understood and accurately described by Marchand in 1895. He identified it as being derived from both the

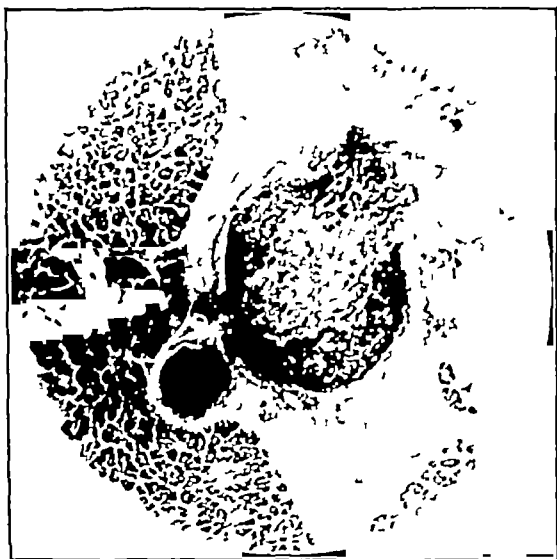


FIG 2—Section from the pancreas showing tumour in a vein.

Nitrites for Seasickness.—Drs J Frank Percy and Daniel B Hayden announced that doses of from 0.2 to 0.3 gm. (3 to 5 grains) of sodium nitrite every two hours relieved eight persons of such symptoms as ocular nystagmus, vertigo, ataxia and nausea within four hours. Moreover, the patients did not suffer any recurrence of the symptoms. Now further support for this method comes in a note by Dr A Sellheim of Leningrad to the *British Medical Journal*. He found that a single drop dose of a 1 per cent solution of glyceryl trinitrate (nitroglycerin)—which has the physiological action of nitrites—kept one patient from turning sick. Another person who was sick was able to take dinner twenty minutes after swallowing 0.65 mg daily. Other patients were protected from seasickness or cured of it by one dose of two drops of a 0.5 per cent solution placed directly on the tongue. Here apparently is a method independently developed in two widely separated places. The clinical evidence seems perhaps less empiric than for many of

Langhans' and syncytial layers of the placenta, and traced its etiological relationship to the hydatid mole.

Marchand describes two separate types of tumour. The first is the typical form, which tends to imitate the trophoblast of the early months. This is a very malignant type that tends to metastasize widely, dissemination occurring by the blood stream. Our case is a good example of this "typical" chorioepithelioma. The second variety is the atypical one, in which the Langhans' cells are less numerous, and syncytial masses fewer, but there is a diffuse infiltration of the maternal tissues with chorionic wandering cells. The tumour is not nearly so malignant, cures from curettage and hysterectomy are on record.

Normally, both the Langhans' and syncytial layers have a tendency to grow outward into the spaces between the villi. The syncytial covering becomes heaped up, forming polypoid processes, which may break off, be free in the intervillous spaces, or even enter the blood stream and be carried to distant organs. However, once pregnancy is over these cells rapidly disappear. In chorioepithelioma, on the other hand, the normal destruction of these cells does not occur. Hence, as in the case cited, the uterine tumour may be very small or even entirely expelled with the placenta, while widespread metastases are present.

the remedies for seasickness heretofore available—*J Am M Ass*, April 28, 1928

"I say, without the slightest fear that I may be overstating my case, that there is no profession which is more exposed to the temptation to forget honour, humanity, and kindness than the medical profession, and none in which the exploitation of human suffering is easier. Yet there is none in which the temptation is so triumphantly withstood. Let this be remembered by the public when they feel inclined to sneer at medical etiquette and to speak of it as if it were a code for maintaining selfishness and enrichment. Medical etiquette is the salvation of the patient. It is the one thing which stands between him and the dangers of exploitation. It is what makes him and his sufferings hold the dominant part in the dread dramas of pathology."—John St Loe Strachey, *The River of Life*

Editorial

OF THE MAKING OF BOOKS THERE IS NO END

ONE of the pressing problems facing the scientific world of to-day is that involved in the extraordinary number of scientific publications issued annually. The vast majority of these are papers or short contributions giving the results of investigations in the various fields of science, including medicine, pathology, bacteriology, physiology and biochemistry, in which the annual output is ever on the increase. This ever-increasing output is not the same in all departments, but in all during the last fifteen years it has very greatly exceeded the annual rate of increase in each of the preceding twenty years, when the total number of papers published was not more than a few thousands in all lines.

What it is now may be inferred from an estimate of the number of scientific journals annually published, made by Dr Jocelyn F Thorpe and given in his address as President of the Chemical Section of the British Association at the meeting in Oxford in 1926. This estimate was 23,000. If in each subject on the average ten papers, a conservative estimate, appear, then more than 200,000 scientific papers are published annually. What this signifies concretely for chemistry is indicated in Dr Thorpe's statement that to the joint library, in Burlington House, of the Chemical Societies of England, 800 volumes of chemical journals are now added annually. "The mind is appalled at the prospect," he says, "that will confront civilization in a century from now, unless some general method of curtailment of publication is adopted and observed. The space occupied by our ever-increasing libraries will rival that of the cemeteries which threaten to cover the earth eventually. The cemetery problem can be solved by cremation. Is it too much to hope that a judicious exercise of cremation may also be applied to our libraries?"

In medicine and the allied sciences the publication problem is as threatening as it is in the other sciences. Even to-day the

number of papers published annually in medical journals is so large as to defy even approximate estimation, but it is certainly well up in the thousands. Indeed, on insulin alone, according to a statement made last year at a meeting of German pharmacologists, more than 5,000 have appeared since 1924.

That this enormous output is excessive is admitted generally. Professor Frederick von Mullen, the eminent clinician, two years ago severely criticized the editors of the German medical journals, charging them with publishing anything and everything that was offered in the form of contributions, whether or not these were worthy of appearing in print, thus loading the record with a vast mass of inferior stuff.

Where is this all to round up? Will these myriads of papers be read, noted and referred to ten years from now? Or will they be remembered like "the snows of yester year?" To give attention in the years to come to a multitude, perhaps thousands, of papers on a single more or less limited subject will result in the breeding of scientific book worms, specialists who "know more and more about less and less", and whose influence on the general trend of knowledge in the sciences, in which they are enlisted, will tend to have an ever decreasing effect.

One of the most influential factors in the promotion of this enormous output of publication, so far as America is concerned, is the status accorded in the universities to members of the staffs based on the number of their publications each year. It would appear that no junior teacher has any chance of promotion who does not publish at least one scientific paper a year, and promotion is assured for one who has many papers to his credit, whether they be important or trivial in value. In consequence, there is an ever increasing tendency amongst the younger generation of scientific workers to multiply their papers by publishing the results of a single investigation of a subject

in a number of separate contributions, each with the same title, but labelled separately by the numerals I, II, III, IV, and so on. It is not only junior scientific workers who are prone to multiply in this and other fashions the number of their publications. It is disturbing to read in a recent eulogy of a senior scientific worker that he has published more than two hundred papers! If every scientific worker aimed at publishing one hundred papers the result would be appalling in a few years.

The old saying, "Of the making of books there is no end," was expressed when all the written word was in the form of manuscript, and manuscripts were countless in the libraries of the ancient world. The Arabs in the eighth century burnt the library at

Alexandria, the Moslems did the same in the fifteenth century for the library at Constantinople, and the Goths, Vandals and Huns played a like part in their invasions of Italy before the sixth century. In consequence, of the ancient Greek literature not more than ten per cent has survived. Much that was of inestimable value and much that was worthless have thus gone into oblivion. We cannot hope, even if we were so minded, to have hordes of barbarians invade our Western world and, thus, in their rude fashion, solve our menacing library problems.

How about a League of Nations' Committee to suggest a code of ethics which will impose a severe circumspection regarding publication in science?

A. B. MACALLUM

THE NEW WORSHIP OF THE SUN

THE sun has at all times and in all climes been an object of veneration. Indra, Ammon Ra, Zeus, Jupiter, Apollo and Wodin are all, probably, personifications of the king of the heavens, and, as a merely physical object, the sun has been worshipped by native tribes in southern United States, Mexico and Peru, and still is, to-day, by the Parsees, the modern representatives of the Zoroastrians. This need cause no wonder. The sun is the most striking and splendid single object in nature. It is the source of light and heat, it is the dispenser of health and happiness, it is the giver of life itself. All will admit that the sun is essential to the welfare and continued existence of all living creatures, whether animals or plants. Yet, while this fact has been patent for long, it is only recently that the explanation of the fact has been dawning. The story of the sun, in this its latest phase, is as entrancing as the plot of any novel, and we are only on the threshold of our knowledge.

As an evidence of the wide interest that the subject is beginning to evoke among all classes, reference may be made to the "Sunlight and Health Number" of the London *Times*, which appeared on May the twenty-second, last. This is a publication of forty large pages, twenty-two of them being devoted to articles by recognized authorities

on different aspects of the subject. The words of the *Times* in the introductory editorial are so happy and appropriate that they must needs be quoted here.

"The modern use of sunlight as a healing agent is a rediscovery of knowledge which at one period of history was widely disseminated. Nevertheless, the modern use of sunlight is entitled to rank as in some way a new departure, for it is based on observation and study which belong peculiarly to the present stage of the evolution of science. The story is among the most interesting and romantic in the annals of medicine. Some ten years ago, when Europe was engaged in the final struggles of the Great War, the discovery was made that the lack of animal fats, which had resulted from the enormous consumption of fat in the manufacture of high explosives, had reduced human resistance to a number of diseases. Rickets was widespread throughout the Central Empires, tuberculosis was taking a greatly increased toll of life in all the belligerent countries. When the war ended efforts were made to supply fats, in the form of cod-liver oil, to the children of Vienna and other stricken cities, and then the strange observation was made that this supply, though apparently essential in the winter months, became less necessary as summer

advanced The first glimmerings of the truth were received that animal fats are, in some respects at any rate, an equivalent of sunlight in the balance of health, or, in other words, light is food Only eight years have passed since the first announcements of the discovery were made, yet in these eight years a new science has been established and a new therapy introduced "

Attention was directed anew to the work of Dr Edward Mellanby, who, in 1915, had made the discovery that rickets is a "deficiency disease," thus bringing it into the same category with scurvy and beri-beri The trouble lies, as all now know, in the lack of a substance known as "Vitamin D," which Dr Mellanby showed to be soluble in fats and oils

When the war ended a commission was sent to Vienna by the British Medical Research council, in collaboration with the Lister Institute of Preventive Medicine, consisting, with others, of Drs Harriette Chick, Elsie Dalyell, Helen Mackay and Miss E M Hume, which investigated the subject of rickets for about three years Then it was that the beneficial effects of sunlight in this disease were laid bare, and the conclusion was reached that in some unknown manner the rays of the summer sun supplied the deficiency for which, in winter, cod-liver oil was a specific The questions were then asked—"Is cod-liver oil, then, a sort of bottled sunlight?" The cod is a deep-sea fish, living in northern waters, remote from the rays of the sun "How can sunlight reach it?" In due time came the answers On the surface of the sea are countless myriads of animalculae, known as plankton, which have the power of absorbing the sun's rays, much as blotting-paper absorbs ink These minute creatures form the food of the squid, which in eating them acquires their treasure store of light In turn, the squid is eaten by the cod, and so, by two steps, the actual rays of the sun become stored, to become potential for good, in the liver of the cod

While these researches were going on, Dr. Huldchinsky, of Berlin, also working on rickets, made the remarkable discovery that if, instead of giving cod-liver oil to a child affected with rickets, he gave it a bath in the light from a quartz mercury-vapour lamp,

recovery took place In other words, the light from the lamp was the equivalent, therapeutically, of cod-liver oil This discovery was investigated by the Vienna commission and its truth confirmed

Now the light from a quartz mercury-vapour lamp possesses properties like those of the summer sun It seemed, therefore, that certain animal fats are related in some way, at least so far as their influence on the human body is concerned, to solar rays, whether natural or artificial Here, again, was a puzzle It was known that the chemical rays, that is the violet and ultra-violet rays, cannot penetrate the skin more than the fraction of a millimetre Could it be possible that rays which cannot pass through the thinnest skin could influence the body in much the same degree as fatty foods? Some extraordinary experiments were next carried out One of these was to keep a number of rats in the dark and without fat They developed rickets But, if the floor of the cage was spread with sawdust that had been exposed to sunlight rickets was prevented The conclusion is obvious Next, Professor Steenbock, of Wisconsin, discovered that many foods which did not contain animal fat could be charged with the fat-soluble vitamin by exposing them to the action of the summer sun or the quartz mercury-vapour lamp The vitamin in question was found to be different from the growth-promoting vitamin A and also from vitamins B and C So it was called vitamin D

Among substances widely distributed in nature, a constituent of all animal cells and of the natural oil of the human skin, is a solid alcohol known as cholesterol It soon developed that irradiated cholesterol, as commonly found, contained vitamin D, whereas cholesterol not so treated did not The rationale of the whole wonderful process is therefore this The cholesterol of the skin may be called the pro-vitamin The chemical rays do not shine through the skin, they shine on it, and, so doing, charge the cholesterol therein with vitamin D, which thus constitutes a store upon which the body may call at any time by means of the blood circulation However, pure cholesterol cannot store up vitamin D under the influence of light It has been found that the important substance is an impurity commonly

found in cholesterol, now known as "ergosterol" As has been aptly said, ergosterol is the true "sunlight sponge"

More recently, confirming this new principle, the Misses Hume and Smith, associated with Dr S N Lucas, have tried the effects of injections of irradiated cholesterol into the skin of rats and rabbits, and found that this procedure could prevent the development of rickets Thus, the mysterious action of sunlight is convincingly explained To the well-known physiological actions of the skin, as a protector, an organ of tactile sense, a heat regulator, and an eliminator, must be added another, fully as important, namely, that of absorbing and fixing the chemical rays of light, thus transforming them into a life-giving benefactor

Ergosterol is a white crystalline substance, first isolated from ergot of rye, by the French chemist Tauret When irradiated it becomes a pale yellowish oily substance of extraordinary potency A daily dose of one-hundred-millionth of a gram will produce normal calcification in a rat fed on a rickets-producing diet The manufacture of ergosterol is now an important industry, and it is possible to incorporate measured quantities of vitamin D with various foodstuffs, such as bread, biscuits, milk, butter, margarine, malt and chocolate The summer sun of Canada or Australia can now be trapped and confined in a bottle of milk or a pat of butter, and shipped to less favoured lands The whole thing reads like a fairy-tale

But, what are vitamins? Are they chemical entities or merely properties, hitherto unknown manifestations of electronic force, as tenuous as the fairies themselves? Only time can tell

It is a matter of common knowledge that diseases of the respiratory system, notably, influenza, pneumonia and bronchitis, are more frequent and more deadly during the winter months The general death rate, both in adults and children, is higher during the same period It is also known that from October until March the sun's light is very poor in the chemical rays We may safely say that the months of darkness are the months of disease and death In fact, we have to store up sufficient vitamins in summer to carry us over the winter

Dust, smoke (more abundant in winter), fog, confinement within doors, and heavy clothing are all factors that render less efficient the beneficent properties of the sun The remedies are obvious In passing, it may be remarked that, whatever may be thought of the clothing of the modern woman from the standpoint of art or morals, it at least is healthy Low-necked and sleeveless dresses, short skirts, and imitation-silk stockings certainly allow the ultra-violet rays fuller play than did the old-fashioned dress of heavy material, high-necked, long-sleeved and often trailing on the ground Could the modern man be induced to adopt a modified scout costume, with no hat, loose neck-cloth, and "shorts," he too would absorb more health One wonders if the Doukhobors in our North-west were not ahead of the times!

The cult of the sun is quickly coming to the fore The proof of this is seen in the remarkable results that are being obtained in the treatment of surgical tuberculosis by means of sun-baths, as in the Lord Mayor Teloar Hospitals at Alton in England, and at Leysin, Switzerland

But what is to be done in winter, when the sunlight is so ineffective Cod-liver oil, irradiated foodstuffs and ultra-violet-ray baths can meet the need to some extent Unfortunately, irradiating foodstuffs, to increase their store of vitamin D, often makes them unpalatable, and, what is perhaps worse, frequently destroys the other equally essential vitamins More study is needed here

The matter of the practical application of the principles so far discovered demands a word of caution that cannot be too frequently repeated In the case of sunlight, particularly when artificial, we are dealing with a potent agent Its value is beyond question We know very little about its harmful properties Yet, that it has some is equally beyond question Only continued research can put the question of sunlight therapy on a sane scientific basis Nations have been looking for their "place in the sun" So will individuals, but they should do it with circumspection and only under competent advice

In the meantime, we may expect to find, as has already so often been the case in religion and philosophy, that false prophets will arise, who will exploit the wonders of science and the credulity of the uninformed

for their own profit. Medical men must lend their influence to put a drag on the wheels of the coach of progress, when it takes this direction

A. G. NICHOLLS

ADMISSION TO MEDICAL PRACTICE

FROM sea to sea, across Canada, the medical schools have completed the work of another session, and at the convocation exercises of their several universities, some hundreds of young men and women have received the coveted diploma, the God-speed of Alma Mater and the plaudits of friends. They have left the university halls well instructed in the subjects of the medical curriculum, with the inspiration of earnest and efficient teachers, full of high hopes and lofty aspirations, anxious to take up the responsibilities of the physician's calling and to enter upon the great-enterprises of life.

But while they have satisfied university authorities that they are worthy of their diplomas and of the trust which the award of these diplomas implies, it is the belief of a very considerable proportion of the body politic that they have not been examined enough, and so they must now appear before other bodies of examiners with whom rests the decision as to whether or no they are to be permitted to practice their profession. Scarcely has the recent graduate recovered from the hectic days and nights of the final examination period, and scarcely have his ischial tuberosities ceased from burning under unwonted strain and friction, than he must begin preparation for another series of examinations which, though unlikely to be more searching, are very likely to be more trying, because conducted by men who are mostly complete strangers to the candidates and who may not be in very intimate touch with academic work.

The reason assigned for this duplication of examinations is that the public must be protected from doctors with inferior preparation. There was a time when inferior schools were numerous, though not in Canada. At the time of Confederation provision was made for provincial autonomy in educational matters, and in each province a body was constituted to administer a Medical Act. Each Medical Act was originally de-

signed for the protection of the public. Some have been so amended that they do not furnish adequate protection to the public, none are, or ever were, intended to be of special benefit to the medical profession.

Prior to, say, a quarter of a century ago, one of the chief duties of a provincial medical board was to prevent its province from being overrun with graduates of inferior schools which flourished in an adjoining country. The readiest method of elimination was the examination, and so each provincial board set up its own examination, which must be passed by everyone who wished the license to practise in that province.

Conditions have changed so entirely within the past few years that from all over Canada we hear voices raised in protest against present examination requirements. It is argued that Canada is no longer dependent in any degree upon other countries for her supply of physicians. Her own schools rank well amongst the medical schools of the world, and Canadian medical graduates rarely suffer by comparison with graduates of schools in other countries. The medical profession throughout Canada is fairly well organized, and is practically a unit in demanding high standards of medical education. Why, therefore, should not more responsibility be placed upon the universities and why should some measure not be devised which would place both tuition and the examinations under such control as would satisfy all concerned that graduation could be taken as evidence of professional capacity and trustworthiness? The retort which perhaps counts for most is that there will still be an occasional application for registration from a foreign school, and that difficulty might be experienced should a foreign candidate be required to take university rather than provincial examinations. The argument is offered for what it is worth. Possibly, it might be advisable to maintain intact the machinery for an occasional

provincial examination But cannot consideration now be given to some means which will obviate the necessity for graduates of Canadian medical schools to take other than the university examinations?

We look to the Motherland for our lead in many things In this particular, could not the procedure there, with such modifications as may be necessary, be made applicable to Canada? Thus the Medical Council of Canada might be empowered with general supervision of the curricula of the several schools and have valuator attend at examinations To graduates of all satis-

factory schools, the certificate of the Medical Council of Canada might be granted at once An unsatisfactory school would be quickly brought to the mark if its graduates were refused the certificate of the Council

There are difficulties in the way, of course, and the agreement of each province would have to be secured But these difficulties should be no greater than those encountered and overcome by Sir Thomas Roddick and those associated with him in getting the legislation known as the Canada Medical Act and in establishing the Medical Council of Canada

W H. HATTIE

CHRONIC APPENDICITIS

APPENDICITIS is a subject of ever-recurring interest, and, in view of its importance, will doubtless continue to be so The acute variety, usually clear-cut in its manifestations and onset, presents as a rule little difficulty in its recognition and treatment This is not the case with the chronic form In looking over recent articles and discussions on chronic appendicitis in the medical journals, one is struck with the haziness that invests the subject and the differences of opinion that very competent observers have expressed about it In fact, after perusing these, one is likely to fall into the same horrid state of incredulity that characterized Betsy Prig in regard to Mrs 'Arris, when she exclaimed "I don't believe there aint no sich person"

Assuming for the moment that there is such a condition as "chronic" appendicitis, the symptoms usually attributed to it are so inconstant and, moreover, may be produced by so many other conditions, that the clinician will frequently be in doubt Under such circumstances the pathologist has, or should have, the last word It may, then, very properly be asked what light he has to throw on the matter

At the outset it should be made clear that there is a common condition of involution, or "senility," of the appendix in which that structure becomes gradually atrophied and fibrosed, with obliteration of the lumen commencing at the tip This process begins in the early twenties, and affects about twenty-five per cent of appendices, according to Ribbert and A O J Kelly (Philadelphia

Medical Journal, 1899, IV, 928, 983 and 1032) Ribbert, in a study of four hundred appendices removed *post mortem*, found this process going on in the absence of any indications of previous inflammatory change Such appendices are smaller than normal, fibrous, but flaccid, and microscopical examination fails to reveal the presence of inflammatory cells or anything else, except involution, with a replacement fibrosis and a deposit of fat Some surgeons would include this condition with chronic appendicitis, but this classification is clearly wrong

Excluding such, then, instances are met with, both in operating-room and autopsy material, in which the appendix is large, thickened, rigid, somewhat hyaline in appearance, with more or less complete obliteration of the lumen, sometimes cystic It may also be adherent Microscopical examination shows diffuse infiltration of all the coats with inflammatory round cells and leucocytes, fibrosis, loss in parts of the mucosal lining, destruction of the lymphoid follicles, and obliteration of the cavity The process is entirely different from the other, and must be regarded as inflammatory

The question arises whether this latter condition is the result of previous acute attacks, to be called, perhaps, "relapsing" appendicitis, or whether it is "chronic", that is, slow and insidious from the start Inasmuch as appendices removed during an acute attack or in an interval sometimes show fibrotic changes, there can be no doubt that the first-mentioned possibility is a fact In this case, between the acute attacks there

a period of quiescence, but yet, the inflammatory process goes quietly on. It is stated, on good authority, that the appendix described above as that of chronic inflammation may be found in cases where a history of previous attacks of inflammation is lacking.

If so, this must be rare. It is to be noted that some investigations should be made to clear up this point definitely.

While clinicians are disputing, there can be no doubt in the minds of the pathologists that there is such a condition as "chronic" appendicitis. It is undoubtedly, not often however. The main reason for this is that patients as a rule either are killed or die during the acute phase of the disease. Surgeons who admit the existence of chronic appendicitis seem to be agreed that the condition is rare.

The importance of this conclusion lies in the logical inference that, in the presence of symptoms suggestive of chronic appendicitis, to enter upon the great anti-inflammatory condition must not be diagnosed until everything else has been excluded.

A discussion on chronic appendicitis in children took place on February 24th, at a combined session of the sections of the Study of Disease in Children and of Surgery of the Royal Society of Medicine, in which some useful points were brought out. Mr. A. J. Walton, in regard to incidence, reported 906 cases of appendicitis, 305 of which he regarded as chronic (33.66 per cent), 186 cases occurred in children under the age of fourteen years, of which 33 were chronic (17.74 per cent). That is to say, Mr. Walton finds chronic appendicitis to be rather less than half as frequent in children under fourteen as in older persons. The figures are adults, 37.77 per cent, children, 17.74 per cent. None of his cases in children had been chronic from the beginning. His category of chronic cases included those without active symptoms, even though the condition was a late sequel of an acute attack, and also those with distension, fibrosis and stricture formation, and external dense adhesions. His list probably also included cases in which the appendix was not diseased, but showed senile atrophy or was involved in a Jackson's membrane. We have given reasons why senile atrophy should not be regarded as chronic appendicitis, and should like to know how many of Mr. Walton's cases came

under this category. Evidently, the figure 33.66 per cent for chronic cases is a remarkable number. Of course, this figure is not applicable to the juvenile cases, in which normal involution would not have been considered.

The conditions that should be considered in any given case before a diagnosis of chronic appendicitis is made are—acidosis, atony of the caecum with vaginal ptosis, ureteric calculus, "dyspepsia" due to peptic ulcer, gall-stones, tuberculosis and actinomycosis in the neighbourhood of the appendix, carcinoma of the appendix, and, in children, especially, acidosis, enlarged lymph nodes at the ileocaecal angle, mobile caecum, kinking of the ileum or appendix, inflammatory bands, intestinal colic, and, in girls, ovarian and other pelvic conditions. Acidosis has been mistaken for acute appendicitis, as pointed out by Drs. Gibson and Mann in their paper published elsewhere in this issue, and may also be a cause of symptoms attributed to relapsing and chronic cases. This mistake is not likely to happen if the possibility is remembered and care exercised.

Pain in the right iliac fossa, especially if localized to McBurney's point, or coming on after exertion rather than after meals, would be suggestive of appendicitis. X-ray examination in some cases may be of service, though in others it may only confuse. If the appendix can be visualized after the barium meal, it retains its load more than forty-eight hours, and is definitely restricted in movement on palpation, the presumption is fair that the appendix is involved in some way, though it need not be by chronic inflammation. Or, if the appendix does not fill, it would suggest kinking or obstruction of the lumen.

The importance of a correct diagnosis lies in the fact that only by having a correct and full idea of the condition present can the proper relief measures be instituted. It would be quite possible, for instance, to operate and remove an adherent appendix, where it was only secondarily involved, without relieving the symptoms, and even to make them worse by adding new adhesions to old. Clearly, much circumspection is needed in dealing with chronic appendicitis and the many conditions that may simulate it.

THE SIGNIFICANCE OF RÂLES

HOW much should we depend on râles as a guide in detecting the early stages of pulmonary disease? And once they are established how much are they an index as to the progress of the condition? These questions are raised by Dr F H Heise (*Am Res of Tuberc*, April, 1928, vii), in a study of a series of tuberculous patients at the Trudeau Sanatorium, and his answer tends to the general conclusion that râles are by no means reliable guides in early diagnosis, nor yet in prognosis. He has examined case records of 1877 tuberculous patients, and has compared the findings recorded on their admission with the confirmed diagnosis made later on, making a special point of the degree of inflammation given by the x-ray. Dividing his cases into groups of minimal, moderately advanced, and far advanced, his investigations bring out the following points:

In 351 of the minimal cases only 145, or 41 per cent, were found to have definite or even questionable râles on the first examination, leaving more than half (59 per cent) with no râles discovered at this stage. In nearly all of these minimal cases, however, definite x-ray changes were found.

The moderately advanced cases formed a group of 1,299, and of these it was found that 980, or 75 per cent, showed râles, leaving a rather large percentage (considering the degree of the disease) in which diagnosis would not have been made if râles alone had been the guide.

In the far advanced cases, as might be expected, râles were noted in nearly 90 per cent of 227 patients.

It is difficult to lay down hard and fast principles regarding the significance of râles. There is probably no other physical sign to which the medical man is introduced so early, and none other which we must more clearly learn to recognize, and also to discount, at its proper value. It is not to be expected that it will be disregarded as a guide in diagnosis, but with such discrepancies between their existence (or detection) and the proved presence of early disease, there should be less temptation to wait for their appearance before deciding that disease is developing. After all, their detection is affected by

anatomical considerations, and, besides, the earliest stages of tuberculosis may not necessarily be accompanied by râles. There is still room for proof as to how the finer type of râles are produced.

What we should learn from this investigation, therefore, is not to underestimate the significance of râles *per se*, but rather to refuse to be misled into a feeling of security because we cannot detect them.

The next point taken up by Dr Heise deals with the information that râles give in regard to the cause of the disease. Are we to assume that the improvement in a focus is accompanied by a corresponding diminution in the number of râles and the size of the area over which they are heard, or *vice versa*? There is no doubt that in acute relapses or well marked improvements changes in the quality and number of râles can be easily appreciated, but do these changes coincide enough to give the fullest information as to the progress of the disease?

To answer this question, 412 records were gone over to see how changes in the râles compared with what the x-ray showed, and it was found that during a period of six months the râles remained the same as to area and character in 111 cases. But the x-ray examination of these cases showed definite improvement in 93 per cent, relapse in 2 per cent, and a stationary condition in only 5 per cent. From this it may be assumed that, if râles are to be taken as an index of progress, their being stationary is strongly in favour of improvement in the lesion.

Even when the râles were found to have increased in area, however, x-ray showed that in a large percentage there was improvement, and that only a small number had remained stationary. In only 23 per cent did the increase in râles coincide with an advance as shown by the x-ray. It was when the râles were in process of diminishing that there was most nearly complete correspondence in 88 per cent of this type of patient the improvement was confirmed by the x-ray. In a small percentage, however, there was relapse or a stationary condition. Under these conditions, it seems fairly safe to conclude that lessening of the number and

become a great beneficent movement which has extended into every civilized country

Henri Dunant was the son of Jean-Jacques Dunant, a member of the Council of Geneva, and of Anne-Antoinette Colladon, the sister of a famous Swiss surgeon. He was brought up in an atmosphere of refinement, religion, and philanthropy, and early took an interest in certain movements for the betterment of the lot of mankind which were being talked about at that time. Besides his mother, three women in particular seem to have influenced his mind, Harriet Beecher Stowe, whom he met in Geneva in 1853, Elizabeth Fry, and Florence Nightingale. The questions of slavery, prison reform, and military nursing, then, interested him greatly.

His opportunity came in 1859 when, travelling as a tourist, he arrived at the field of Solferino as the great battle was going on between the French and Italians on the one side and the Austrians on the other. Three hundred thousand men were engaged in the struggle for fifteen hours. The Austrians were routed, and from thirty to forty thousand men left, dead, dying, and injured, on the field, without anyone to come to their aid. Shocked at the sight, Dunant organized a band of volunteer workers, who for several days worked incessantly to relieve the situation. The neighbouring town of Castiglione became one vast hospital. The authorities issued an edict of neutrality to protect the workers, and they were officially recognized by the peasant costume of Lombardy which they wore.

This experience determined his future activities. For the next two or three years he travelled over Europe, lecturing and writing about the crying need for the organization of a proper medical and nursing service for times of war. Then, in 1862, he published his book *Un Souvenir de Solferino*, which attracted much attention. In it he drew a graphic picture of the terrible aftermath of the battle, the unbelievable suffering, and the heroic efforts made to meet the situation. He asked this question, "Why have we thought it well to recall these scenes of grief and desolation, to recount such lamentable and gruesome details, to draw such vivid pictures of despair?" The answer he gave is in the form of another question: "Would it not be possible to found and organize in all civilized countries permanent societies of volunteers which in time of war would render succour to the wounded without distinction of nationality?"

Another lecture tour followed, and Dunant's ideas gained acceptance more and more. The Society of Public Safety of Geneva, under its president, M. Gustave Moynier, took up the matter and organized the first Geneva Conference in 1863. Dunant's views were accepted, the scheme was systematized, and nation after nation adopted the provisions of the Treaty of

Geneva, until to-day fifty-nine nations of the world have subscribed to its articles. The inspiration of a simple citizen has become an international law among civilized peoples.

But Dunant's subsequent fate was only just saved from being a tragedy. He had spent his substance for the good of mankind, in the enthusiasm which attended the great movement he had initiated; his part was overlooked, and he became an inmate of an almshouse. Fortunately, his plight was discovered by a French journalist, and the world was quick to rectify its neglect. Dunant was awarded, jointly with Frederic Passy, the Nobel Peace Prize in 1901. This honour was well bestowed, for by this time, in Dunant's mind the great idea of the Red Cross movement had expanded into another, greater still, one that will in time make the Red Cross less necessary—the idea that war must be outlawed among civilized races. In this way he continued to labour, and in 1910 died full of years and honour.

A. G. NICHOLLS

HIDEYO NOGUCHI

Dr Hideyo Noguchi, of the Rockefeller Institute, died May 21st on the Gold Coast from yellow fever, while completing his studies on this disease. Thus, one more name is added to the list of medical men who have died as martyrs of science, in the search for truth. We are reminded of Lazear, Yersin, Dutton, Ricketts, McClintick, Pirie, and Adrian Stokes, to name only some.

Noguchi was born in Japan in 1876. Coming to America, he became Assistant in Pathology in 1901 at the University of Pennsylvania, in 1903, Research Assistant in the Carnegie Institution, in 1914, a member of the Rockefeller Institute for Medical Research.

His contributions to medical science were numerous and of the first order. Among them were, the artificial cultivation of *spirochaeta pallidum*, the demonstration of the organism of syphilis in the brain in general paralysis, and in the spinal cord in locomotor ataxia, the introduction of the luetin test for syphilis, the cultivation of micro-organisms associated with infantile paralysis and rabies, a method for attaining a bacteria-free vaccine for small-pox, and the isolation and cultivation of *Leptospira icteroides*, and the development of a preventive vaccine and serum in connection with yellow fever.

He was the recipient of honours too numerous to mention here. His death removes one of the outstanding figures in our profession, and leaves the world of science much poorer.

A. G. NICHOLLS

Special Articles

PEACE-TIME POLICY AND HEALTH PROGRAM OF THE RED CROSS IN CANADA*

A REVELATION OF THE WAR

By JAMES W. ROBERTSON, C. M. G., II D

Chairman of Council, Canadian Red Cross Society
Ottawa

For the first time in all history the Great War furnished the occasion and made evident the necessity for a medical examination of practically the entire manhood between certain ages, of Great Britain and some other countries. That is a very noteworthy fact. The results shown by these examinations were not published during the War.

The Report, known as Volume 1, upon the physical examination of men of military age by National Service Medical Boards in Great Britain from November 1, 1917 to October 31, 1918, covers practically the last year of the war. The number of examinations held during that period was 2,425,181, and a summary of the results shows the following facts:

Of every nine men of military age in Great Britain, on the average three were perfectly fit and healthy.

Two were upon a definitely infirm plane of health and strength.

Three were incapable of undergoing more than a moderate degree of physical exertion and could almost (in view of their age) be described with justice as physical wrecks.

The remaining one was a chronic invalid with a precarious hold on life.

After reviewing the whole situation in the light of previous volunteer enlistments, etc., the report goes on to say:

"It seems probable, therefore, that the men examined in the year under review may be regarded in the aggregate as fairly representing the manhood of military age of the country in the early part of the twentieth century from the standpoint of health and physique, and that deductions founded upon the observations made at the medical examination of these men may be legitimately looked upon as a trustworthy criterion of the national health of the period."

ACTION TO MEET THE SITUATION

What about the women and children in a nation whose men at military age were in that state? Disaster from without had been vanquished, but danger threatened from within.

*This being the centenary of the birth of Henri Dunant, the founder of the Red Cross Society, general attention has been again directed very strongly to this organization. At the request of the *Journal* Dr. Robertson, Chairman of the Council of the Canadian Red Cross Society, has been good enough to prepare this statement on the activities of the Red Cross in Canada. We desire to thank him cordially for this contribution which is both instructive and timely.

Steps were therefore taken immediately (December, 1918) at the close of the war by the "Big Five," as they were called—Britain, France, Italy, Japan, the United States—to consider and deal with this situation that faced them all. A conference of the medical experts from these five nations took place at Cannes in the south of France in April, 1919. A minute adopted by the Conference referred to the world-wide prevalence of disease and suffering as "due to widespread ignorance and lack of application of well-established facts and methods capable either of largely restricting disease or of preventing it altogether." The danger and the damage were due to ignorance and lack of application on the part of the people, not to want of knowledge and skill on the part of leaders.

Subsequently, because of the conclusions of these medical experts, the Peace Conference itself put into the *Covenant of the League of Nations*, Article XXV, in which the members of the League pledged themselves "to encourage and promote the establishment and co-operation of duly authorized voluntary national Red Cross organizations having as purposes the improvement of health the prevention of disease and the mitigation of suffering throughout the world."

The Parliament of Canada proceeded to alter the constitution of the Red Cross Society, to give it the necessary authority "in time of peace or war to carry on and assist in work for the improvement of health, the prevention of disease and the mitigation of suffering throughout the world."

That is the mandate to the Society to go ahead with its peace-time program. The great need of the present time is the improvement of personal and home hygiene. Manifestly, that can be secured only by the willing and intelligent participation of individual men and women and boys and girls. The thing to be done is to bridge the gap between the knowledge of the essentials of personal hygiene and home hygiene now possessed by the natural leaders in preventive and protective medicine—namely, the doctors, public health officials and nurses—and the knowledge and practice generally of the women who are in charge of homes and schools.

RESULTS FROM THE EXAMINATION OF CHILDREN

Take one outstanding and typical example of the situation in Canada calling for action. At the end of the war, the Patriotic Fund, in Montreal, caused an examination to be made of a thousand children—children who were well, not sick, and whose mothers were getting some help from the Patriotic Fund because their fathers had been overseas. A great many more than a thousand were examined, and, as a result of the examination of the first thousand children, a great many de-

fects were revealed. The list shows an astonishing number of defects among these supposedly healthy children of the soldiers. Altogether, 6,404 defects were found. 694 children had "bad" teeth and gums, 918 of these 1,000 children were tea or coffee drinkers. The number of undernourished children recorded in that group of 1,000 was 299, about thirty per cent.

WORLD-WIDE MOVEMENT FOR HEALTH AND AND WELL-BEING

A Red Cross peace-time policy and program of work is now being carried on in fifty-four countries. It is, perhaps, the greatest world-wide movement on behalf of the well-being of women and children and the welfare of people in general since the introduction of Christianity. There has been nothing in the same class with it, nothing comparable to it in scope and fundamental values and nothing with similar promise of the early realization of its highest aims, as indicated by its marvellous achievements during the seven brief years it has been in operation.

The Junior Red Cross has already (by the end of 1927) been organized in 5,744 classrooms in Canada, with a membership of 157,155 children, banded together to carry out in practice the rules of healthy living and thereby form good health habits. The Junior Red Cross Movement is going on in thirty-four different countries with a membership of over ten millions of children.

HEALTH AND GOOD CITIZENSHIP FOR JUNIORS

The main object of the Junior Red Cross in connection with the schools is to help to bring about correction of the conditions indicated, as far as possible and, chiefly, by the children's own desire to participate. Every Department of Education has sanctioned the activities of the Junior Red Cross in the schools, and some Ministers of Education have gone so far as to press upon the teachers the desirability of giving it the quickest and widest application. The primary purpose of the Junior Red Cross is to get the boys and girls interested in learning and doing voluntarily those things which promote health knowledge and health habits, linking up a knowledge of hygiene with habits of living so that the child may have them for all time. The foundation of national fitness and national efficiency lies primarily in the establishment of health habits, and this can only be thoroughly done through the willing concurrence of the person concerned.

Unquestionably, the physical vigor of this nation could be greatly improved in two generations if, by iteration and reiteration, precept, example, and experience, we could so train our children that they would voluntarily and by force of habit keep their mouths clean, drink milk, eat wholesome cereals, consume fresh vegetables and fresh fruit, drink plenty of water, play in the open air, sleep 10 to 12 hours, and follow all the other laws of health that are at the back of the activities of the Junior Red Cross.

THE CRIPPLED CHILDREN'S FUND

In promoting the idea of helpfulness to others, the Junior Red Cross in Canada is chiefly concerned with the Crippled Children's Fund. In this connection a very wide interpretation is given to the word "crippled." Out of money provided by the children themselves, through a membership fee of twenty-five cents a year, or their other contributions to the Crippled Children's Fund, it pays railway fare to hospital and hospital expenses of crippled children whose parents are unable to do it for them. The Junior Red Cross Fund has taken care of more than 5,000 handicapped children up to the end of 1927. That is abundantly worth while. That is service, not in the vague and the abstract, but in a very real sense. It is altruism in action, goodwill in action, not in passive contemplation. In practical reality the children are acquiring good health habits, the essentials of good citizenship, of altruism and of international friendliness.

The net expenditure for the Junior Red Cross, last year, amounted to \$77,807 00.

OUTPOST HOSPITALS AND NURSING STATIONS

In its forty Outpost Hospitals and Nursing Stations, the Red Cross furnishes skilled professional service to the pioneers on the frontiers of settlement in six provinces. Last year more than 12,000 persons were treated in and through them. 866 were confinement cases, most of whom otherwise would have been without competent care. If funds permitted, many more Outposts might be established, to the incalculable advantage of pioneer settlers. The Outposts are always established and maintained in co-operation with the people of the locality and the Provincial Departments of Health. The net expenditure for this service last year amounted to \$139,866 00.

The type of Outpost selected for any community depends, of course, on the peculiar needs of the community and the resources available. There are, however, three types.

(1) The centre for field nursing. The nurse works in the homes and schools of the district, but no provision is made for in-patients.

(2) The rural outpost, with accommodation for one or two bed-patients, but with field-nursing as the chief work of the nurse.

(3) The outpost in a village or small town which functions as a small hospital.

SEAPORT NURSERIES

Canada spends large sums in bringing immigrants to its eastern seaports, and the Red Cross realized that it might contribute something to the work. Consequently, in co-operation with the Department of Immigration and the Health Department, "Seaport Nurseries" were established in Halifax, Saint John and Quebec. In these are welcomed, under an emblem that wins their immediate recognition, the mothers and children who have come to find new homes in a

new land. The youngsters are fed and cared for, the mothers are given a comforting and kindly atmosphere in which to refresh themselves after their ocean voyage. Advice is often asked and as often cheerfully provided, and, when the time comes, the new citizens undertake the next stage of their journey happy in the knowledge that their welfare is a matter of concern to the Society that knows no national boundaries. They have learned, too, that on their arrival at their destinations other Red Cross workers stand ready to furnish any further service that may be found to be necessary. During the last year 35,312 infants, children and women were cared for and follow-up cards were sent for 5,219 families. The cost of these nurseries, last year, amounted to slightly over \$12,000.00.

HOME NURSING CLASSES

A course of instruction in Home Nursing and Home Hygiene was established by the Red Cross in 1924. 1,004 classes have been organized up to the end of 1927 and the course taken by over 13,000 women. These women have gained a knowledge of food-values and the importance of a well-balanced dietary to good health. They have been given simple instruction in the recognition of illness, and have learned the elementary principles of the care of the sick. They have thus become better managers of their own households, and they have been able to instruct and advise their less well-informed neighbours.

RELIEF SERVICE IN DISASTERS

Always in readiness, the Red Cross furnishes Disaster Relief to any community overwhelmed by catastrophe. Its services have been needed in the Haileybury conflagration, the Cochrane epidemic, a cyclone on the Prairies, and, only last year, when two villages in Quebec were destroyed by fire. If the whole world is stirred by an immense calamity, the Red Cross forms a world-wide agency for the collection and distribution of money and supplies.

SERVING DISABLED EX-SERVICE MEN

Red Cross service is still needed for some of those disabled in the war. Its function has been to supplement official services and to meet the needs of those cases which do not fall within government regulations. Red Cross visitors prove to the several thousands of those still in hospitals that they have not been forgotten. Last year this service required an expenditure of \$145,576.00.

POPULAR PUBLICATIONS

The Red Cross publishes and distributes authentic and appropriate health literature in a form that is easily understood by everybody. It employs most expert assistance and acts as interpreter between the scientist and the public, to the

end that the every-day citizen may have the best information and instruction obtainable. It publishes two magazines with a joint circulation of about 60,000 copies a month.

HEALTH OPINIONS AND HEALTH CONSCIENCES

In striving to carry out the purposes assigned to it under the Peace Treaty, the Red Cross has sought to translate them into practical health services such as I have indicated. It seeks to co-operate with other organizations, official and voluntary, and to strengthen all good health measures. It lays particular emphasis upon the necessity of seeking and accepting the advice and guidance of the natural and competent leaders in all health matters, namely, the doctors, public health officials, public health nurses and other competent teachers. Only by following such well trained leaders—men and women of high intelligence, professional ability, irreproachable integrity and devotion to the public good—can safe and continuing progress be made. The rôle of the Red Cross is to back up their services, to create public opinion in support of their work, and to diffuse such popular information among laymen and laywomen as will make opportunities for the special professional knowledge of the few to become beneficially effective in the lives of all.

REPORT OF THE SCHOOL OF PUBLIC HEALTH NURSING OF THE UNIVER- SITY OF MONTREAL AND THE FRENCH HEALTH CENTRE FOR 1927

By J. A. BAUDOUIN, M.D., *Director*

Montreal

We have in 1927 completed the second year of our activities. The area covered in the work of our Health Centre, *viz.*, the parishes of St. Catherine and the Sacred Heart, comprises a population of about 19,000 souls. A total of 23,292 visits were made to the homes in this district, or an average of 1,941 per month. This represents an increase of 1,241 visits over the year 1926. These visits were made to 4,658 cases, an increase of 1,719 above those of 1926. The total attendances at the various clinics for the year amounted to 10,357, an increase of 3,047 over the previous year.

To accomplish the work there were available a personnel composed of one Directress of Nurses, two assistants, four staff nurses (the contribution of the Montreal Anti-tuberculosis and General Health League), and an average of 10 pupil nurses (for a portion of their time).

The various activities of our organizations may be classified under the following general headings: Child Hygiene, School Hygiene,

Industrial Hygiene, Home Care of the Sick, and Contagious Disease Service

CHILD HYGIENE

The Department of Child Hygiene comprises the following services: Pre-natal Care, Post-Partum Care, Care of the Newborn, Care of the Well Baby, and Children of Pre-School Age.

The Pre-Natal Service has as its objective the decrease in maternal mortality, as well as the decrease in deaths of infants attributable to congenital debility.

The total number of mothers under supervision was 407. The total number of births in the area was 656. Therefore, 62 per cent of the births were, as it were, supervised pre-natally. If we recall that an enrolment of 25 per cent is regarded as satisfactory, ours approaches the ideal. Forty-three per cent of the total enrolment occurred during the first four months, a very satisfying fact. Besides the visits made in these cases, the School maintains a Pre-Natal Consultation Clinic, which was attended by 134 expectant mothers. Furthermore, about 53 per cent of the expectant mothers have, on the advice of the nurses, consulted a family physician.

All this work has shown its results, in that only two deaths occurred from puerperal causes.

Post-Partum Service—About 65 per cent of the new mothers were visited by nurses, who render service in conformity with the directions given by the family physician.

Care of the Newborn—The nurses' visits are made daily for the first week, then once a week, and cover the whole of the first month. This service is most valuable in its contribution to the campaign against the too numerous deaths that occur shortly after birth.

Care of the Well Baby—Infants aged from one month to two years come under this service. One visit is made to each child per month. Moreover, the mothers are urged to bring their babies to the consultation clinics specially provided for them. All these activities have given us results that we consider very encouraging. In the case of St. Catherine's parish, the following table will establish this—

INFANT MORTALITY

Year	Births	Deaths from 0 to 1 year	Rate of Infant Mortality
1915	334	94	281
1916	310	94	303
1917	298	82	275
1918	327	86	263
1919	308	76	247
1920	324	72	222
1921	300	47	156
1922	264	39	148
1923	274	56	204
1924	273	60	220
1925	265	34	128
1926	240	37	154
1927	265	23	87

The year 1927 has been the best that St. Catherine's parish has ever had. It shows at the same time an increase in the number of births and a decrease in the deaths, which is the most convincing demonstration that it is possible to furnish.

Gastro-enteritis and congenital debility are still the chief causes of infantile deaths. To combat the former we insist on breast-feeding. The importance of this is shown by the fact that this year all the deaths from intestinal trouble occurred in babies who were bottle-fed. Congenital debility depends mostly on prematurity. Here, the medical supervision of the expectant mother is of the greatest importance.

Service for Children of Pre-School Age—This deals with children between the ages of two and seven years. Many of these are subject to malnutrition, physical defects, and contagious diseases. Two hundred and forty of these children attended the appropriate clinics.

CONTAGIOUS DISEASE SERVICE

Since the visit to the University of Professor A. Pettit, the School has been the distributing centre for the vaccine known as BCG. Three hundred and twenty-one vaccinations were performed, and of these 39 were revaccinated at the end of the year. Four deaths occurred, but none were due to tuberculosis. Fifteen of our immunized babies have been in contact with cases of active tuberculosis. Of these, thirteen are in good health, one is dead from capillary bronchitis, the other is sick. In the last case, there is a cough, and the doctor states that one lung is diseased.

Our tuberculosis service comprises also the home-visitation of the sick in our district. Seventy-five cases of tuberculosis are under our constant supervision. This number constitutes about one-third of the estimated cases in the district. The great majority of our cases are recruited from school children, those who have finished school, and adults from twenty-five to forty-five years of age.

In the families of our patients 339 contacts were found who live under the constant threat of infection. One hundred and forty-five of these have been examined medically. Fifty-two are in good health, 72 are suffering from malnutrition, and 21 are actually under supervision. Twelve children, threatened with tuberculosis, have been admitted to the Camp David of the Bruchesi Institute, and have benefited greatly by their stay in the country.

In the case of diphtheria, as this is a disease that is specially dangerous to children of pre-school age it is upon them that our attention has been focussed. With anatoxin-Ramon it is possible to confer a permanent immunity against this disease. A first injection of anatoxin was given to 236 children, 203 of these

came back for their second injection, and 15th of the latter came back for their third. The parents are asked to bring back their children four months after the last injection, in order that we may determine their immunity by means of the Schick test. More than 108 have been immunized, though only that number of certificates has been issued by the doctor in charge. Our figures show that only 28 per cent of the children of pre-school age in the parish of St. Catherine can be regarded as immunized, and 5 per cent in that of the Sacred Heart.

In dealing with other contagious diseases we are, of course, not so well armed. We have recourse to notification, isolation, the removal of contacts from school, and disinfection. To obtain necessary experience, our pupil nurses accompany the municipal nurse on her official visits. The experience that our nurses get is quite extensive, and I take this opportunity of thanking Dr. Boucher and the members of his staff for the facilities provided.

SCHOOL HYGIENE

The activities carried on for the benefit of school children include medical inspection service and a psychiatric clinic.

By agreement with the city Health Department the School furnishes visiting nurses to two schools (Salaberry and Garneau), which have an attendance of 1,182 children. In the course of their visits the nurses give talks on various health topics. Visits are, also, made to the homes of the children, to determine causes of absence, and to follow up cases of physical defect that have been noted. During these visits the nurses educate the parents and endeavour to obtain their co-operation in having the necessary treatments carried out.

Forty-six children were submitted to a psychiatric examination. Of this number 29 were found to be normal, and 17 showed some degree of retardation in their mental development. In three of the cases the retardation was of three years or more. This raises the question of the provision of a special class for those defective mentally. In connection with this general subject, we are glad to state that we have concluded a most fortunate arrangement with the National Committee for Mental Hygiene. Thanks to the generous co-operation of this Committee, Dr. J. A. Lussier was enabled to make some very valuable observations in the schools of Toronto, which are noted in his annual report. Furthermore, Mlle. Blanche Bourbonnais, a graduate of our school, was asked by the same committee to spend two months in Toronto, which has enabled her to render us very valuable service.

HOME CARE OF THE SICK

The care of the sick in their homes consti-

tutes a necessary part in a course designed for nurses taking up public health work. The service which a nurse is thus called upon to render in a family is always appreciated, and constitutes one of the best means of introduction into such families, of gaining their co-operation, and of making progress in health matters.

INDUSTRIAL HYGIENE

To meet the needs of the time the program of the School of Public Health Nursing includes Industrial Hygiene. We have an understanding with the Imperial Tobacco Company, the Simons Tobacco Company, the American Can Company, the Davies Meat Canning Company, the Dominion and Columbus Rubber Companies, whereby our students are permitted to spend some days in these establishments. To the representatives of these companies we desire to express our gratitude.

In concluding this report on the activities of the School of Public Health Nursing and of the Demonstration Centre, I must, in all justice, give credit for our success to the devoted and competent staff that we are fortunate enough to possess. Nor would the work accomplished been possible without the invaluable aid that we have received from the Government through the Hon. Athanase David, Provincial Secretary, from the City of Montreal, from the Montreal Anti-tuberculosis and General Health League, and from the Metropolitan Life Insurance Company. To these generous benefactors, I desire, in the name of all my colleagues, to express our sincere and deep gratitude.

CONCLUSIONS

1 The lowering of the infant mortality rate is the first indication of the success obtained by a health organization. A campaign against those factors that are most important in causing death is that most likely to be followed by practical beneficial results, and is, also, the most economical.

2 The administration of the vaccine BCG is easy, and ought to be made general throughout the province as soon as possible, in order to enhance the results of the campaign against tuberculosis.

3 Immunization against diphtheria constitutes our chief weapon in the campaign against this disease. Extended to all children of pre-school age, this proceeding is capable of extirpating this disease, thereby preserving to us the lives of the 400 children that are lost to the province every year.

4 The contribution of Mental Hygiene to the great cause of teaching is eminently valuable and should become still more so in the course of time.

(An abridgement of the report kindly furnished by Dr. Baudouin, who deserves congratulations on the good work accomplished.—Ed.)

GASTRO-ŒSOPHAGEAL CARCINOMA ITS DIAGNOSIS*

By LOUIS J. NOTKIN, M.D.

Montreal

Early diagnosis of malignant lesions of the cardia and fundus frequently offers great difficulties. The relatively benign nature of carcinoma in these situations makes it imperative that diagnosis be made early, if surgery is to be of value.

Carcinoma of the fundus and of the cardia is of relatively frequent occurrence. The incidence reported by different observers varies from 7 to 20 per cent of all cancers of the stomach. Other observers note that 40 to 50 per cent of all cases of cancer of the œsophagus have their origin at the cardia. The difficulty in diagnosis lies in the absence of a clear-cut group of symptoms characteristic of the disease, and is increased by the limitations of the various methods of diagnostic technique. The symptoms of cancer involving the fundus are very often referred to the œsophagus, while symptoms of cancer of the cardia are generally gastric in nature. In the former case incomplete examination not infrequently results in the diagnosis of cardio-spasm or spasm of the œsophagus. In the latter case, where the symptoms suggest a gastric origin, x-ray examination may reveal an irregularity of the duodenal cap, which in this case is only an expression of the increased irritability of the stomach. In this manner only the associated condition is disclosed and the disease overlooked. In the presence of œsophageal symptoms the possibility of gastric carcinoma must always be borne in mind.

The onset of gastric carcinoma is sudden in a large proportion of cases, and gradual in a smaller number, where the cancer develops from a pre-existing ulcer. In all cases, however, there is a symptomless latent period of several months' duration and the initial stage at which the patient becomes aware of the disturbance may be regarded as the second stage of the disease. Loss of appetite, pain, gas eructations, regurgitation of small quantities of food or sour liquid, rapid satiation, and dysphagia are the symptoms most frequently complained of. Of these, dysphagia only, with or without remissions, is suggestive of lesions of the œsophagus, cardia or fundus. Malnutrition, cachexia, fever and enlarged cervical glands are late manifestations and are frequently absent.

The test meal gives no conclusive evidence, while estimation of the acidity may often prove misleading rather than helpful. Secondary anæmia, if it occurs at all, is a late sign. Occult blood in the stools is an almost constant and early finding. Occasionally, occult blood may be

temporarily absent, hence the importance of repeated examination. Tarry stools are much less frequent.

While certain of the above signs and symptoms are suggestive, no one, or any group, offers proof positive of the presence of the malignant disease in the areas under discussion. The x-ray must be depended upon for the conclusive evidence. Œsophagoscopy is of little or no value in the diagnosis of cancer of the cardia or fundus, even in the presence of extensive invasion.

X-RAY DIAGNOSIS

From the roentgenological point of view there are two pathological groups of fundal and cardiac cancer—(1) infiltrating flat growths, associated with shrinking (scirrhus type), and (2) the fungating, cauliflower-type of growth. The medullary type of tumour, which in the rest of the stomach gives rise to a filling defect, is seen in the fundus as a tumour-shadow, jutting into the gas bubble which may divide the barium stream as it enters the stomach. This form of tumour growth causes comparatively little difficulty in diagnosis. It is the flat, squamous-celled type that is troublesome. For the diagnosis of cancer at the cardia we must depend upon irregularity of the cardia and of the terminal portion of the œsophagus as direct signs.

The main difficulties in the x-ray diagnosis of cancer of the fundus and cardia are those caused by the location of the growth. In the case of carcinoma situated at the fundus the lesion may be overlooked, unless it is the medullary form and encroaches upon the gas-bubble, because the barium suspension does not fill the fundus in the upright position, nor do peristaltic waves ordinarily traverse the upper pole of the stomach. In the ordinary, routine positions of examination, cancer of the cardia may be overlooked, because the liver-shadow hides the subdiaphragmatic portion of the œsophagus, and, in the horizontal position, because the last portion of the œsophagus and with it the cardia are covered by the filled fundus. Carcinoma of the fundus, as has been previously stated, is frequently associated with spasm of the cardia or lower œsophagus, and that of the cardia with spasm of the lower œsophagus. These associated spastic manifestations may mask the more serious condition lower down in the gastrointestinal tract. It is necessary, therefore, when ordinary methods fail, to resort to special methods of x-ray examination in suspected cases.

If the barium suspension enters the stomach without being arrested in its downward course, or without disclosing some irregularity of the areas under inspection, the barium paste should be tried. Very careful screen examination, in addition to skiagraphy, is essential. The patient is examined in the upright left oblique position, to begin with. This position brings into view the œsophagus in the greater part of its course. The swallowed barium is followed in its passage through the œsophagus, particular attention

* The complete paper, including bibliography and x-ray plates, appeared in *Surg., Gynec., & Obst.*, May, 1928.

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being paid to the manner of its entry into the stomach. There is frequently partial or complete arrest of the barium at the cardia, and, in the case of fungating tumours of the lesser curvature near the cardia a blocking of the barium stream, or a tumour-shadow silhouetted against the background of the gas bubble may be disclosed. When complete arrest of the barium occurs at the lower end of the œsophagus, in spite of taking small quantities at a time, spasm of the cardia or of the œsophagus is diagnosed. Absence of marked dilatation or tortuosity of the œsophagus will tend to rule out true cardio-spasm as opposed to spasm of the œsophagus. Smoothness of the contours of the lower end of the barium-filled œsophagus does not rule out malignancy, since spasm occurring on the oral side of a lesion may be situated in an entirely normal portion of the œsophagus. In idiopathic dilatation the subdiaphragmatic segment of the œsophagus often lies transversely and is directed to the left, while in carcinoma it follows in almost vertical direction, and there does not occur any greater lateral deviation to the left than that usually present. The triangular space, formed where the œsophagus turns forward and to the left to enter the diaphragm, is often obliterated in malignancy.

If, in spite of slow sipping, the barium does not enter the stomach, and the œsophagus is not found to be markedly dilated or tortuous, that is, if signs of longstanding obstruction are absent, the patient should be re-examined after the administration of antispasmodics to the limit of tolerance.

Shrinking of the stomach, and its displacement upward and to the left, may be present in scirrhus carcinoma of the stomach. Diminution in the size of the stomach in cancer of the cardia also occurs. Both signs were present in one of the cases reported here.

Absence of the gas-bubble is an important sign. Infiltration of the cardia may give rise to inefficiency of the cardiac sphincter, resulting in escape of the gas normally filling the fundus. Thus, a permanently absent gas bubble is evidence of patency of the cardia and points to the possible presence of infiltration.

The patient should next be examined in the horizontal position. For proper examination of the fundus it is necessary to have the stomach well filled. Normally, the fundus fills the dome of the left diaphragm and lies in close apposition to it. Its upper limit traces a smooth wide arc. Occasionally, this contour is dentate, this appearance probably having the same significance as the dentate appearance of the greater curvature due to contracting of the muscularis mucosæ. This irregularity must not be confused with that produced by a local lesion. In the latter case the irregularity is not regularly dentate and does not follow the sweeping arch of the fundus, the transverse diameter of the fundus is also much narrower than is usual, due to encroachment of

the tumour upon the lumen of the stomach, or to shrinkage in scirrhus forms.

If careful examination, as outlined above, fails to reveal the presence of a lesion, the region of the cardia should then be thoroughly examined. The cardia is not brought into view for careful inspection by ordinary methods of examination. The reasons for this have already been mentioned. O. Ridder advocates the Stuertz position. The stomach is filled with gas and the patient fluoroscoped in an oblique position, the rays being directed from the right, posteriorly and above, to the left anteriorly and below. An unobstructed view of the cardia and terminal œsophagus is obtained in this manner. According to Piluguay, carcinoma of the cardia can be recognized even in cases showing but little change in the stomach wall, but in which the normal cardiac mechanism is disturbed. There is a persistent trickling of barium through the cardia, and as a rule, the outlines of the opaque meal as it passes through the cardia, are seen to be irregular and ragged. It is only, however, the irregularity of the contrast silhouette in the region of the cardia, with the patient in the Trendelenburg position that can be considered as direct x-ray evidence. In cancer of the cardia the upper pole of the stomach is frequently an unusually great distance away from the diaphragm.

The direct signs of gastro-œsophageal cancer are —

- 1 A tumour shadow bulging into the gas-bubble
- 2 Irregularity of the barium contour as it passes through the cardia
- 3 Splitting of the barium stream on entering stomach

The indirect signs are —

- 1 Spasm of the œsophagus or cardia
- 2 Disturbance of the cardiac mechanism
- 3 Absence of the gas-bubble
- 4 Shrinking of the stomach
- 5 Drawing of the stomach upward and to the left
- 6 Increased distance between the upper pole of the stomach and the diaphragm
- 7 Narrowing of the fundus
- 8 Obliteration of the triangular space mentioned above

CASE 1

I. H., male, aged 40 years, was first seen on May 18, 1925. He complained of difficulty in swallowing solid food, belching of gas, anorexia, loss of weight, marked salivation, and hoarseness of voice. In June, 1924, he complained of indefinite gastric symptoms and some difficulty in swallowing solid food. At the same time, the condition was diagnosed as duodenal ulcer, on indirect x-ray evidence. In spite of treatment the symptoms became more troublesome, particularly the difficulty in swallowing. The history of the next few months can be summarized as follows: the patient became progressively worse, and was, during this period, examined *de novo* by several physicians and a diagnosis of cardiospasm was made in all instances. The condition had progressed without remissions.

At the time of examination, no solids could be taken. There was no vomiting, pain, or regurgitation of food. Belching of gas and marked anorexia were prominent symptoms. The patient had lost twenty pounds in weight. He had always led a continent life, and had been in good health until the summer of 1924.

Physical Examination—The patient was a well developed male, somewhat pale, with evident loss of weight. The pupils reacted to light and accommodation. There were many carious teeth, the tongue was coated. No palpable supraclavicular glands were present. The lungs were negative. The pulse was 84, regular, of good volume and tension. Blood pressure systolic 125, diastolic 80. The heart was negative. The abdomen was full and soft, no organs or masses were palpable, there was no tenderness. Lymphatic, genitourinary, and nervous systems were negative. Rectal examination was negative, except for hemorrhoids. Urine, negative. Stools, occult blood on several occasions. The blood Wassermann test was negative.

Gastric analysis the tube failed to enter stomach. Bougies were passed without difficulty as far as 45 cm from the teeth. No obstruction was met with until the cardiac end of the oesophagus was reached.

Direct oesophagoscopy, July 2, 1925. **Diagnosis** stricture of the oesophagus. The pathological report on biopsy specimen taken from the lower end of the oesophagus, ran as follows: "There is no definite evidence of inflammatory reaction or of neoplastic proliferation."

X ray The patient was instructed to swallow barium in small sips. There was some delay at the cardia, the oesophagus was only slightly wider than normal. The lower end of the column of barium in the oesophagus showed a fine irregularity. Barium entered the stomach in constant small trickles and was caught in a small irregularity of the gastric wall on the lesser curvature just below the cardia. The retained barium remained there throughout the examination. The stomach was very small and lay entirely to the left of the spinal column. In the horizontal position, a walnut sized filling defect was seen on the lesser curvature near the cardia. This defect corresponded with the area of irregularity observed in the upright position.

On the grounds of persistent dysphagia without remissions, the presence of blood in the stool, and the X ray findings, diagnosis of carcinoma involving the lesser curvature and oesophagus was made.

Three months later, because of increasing difficulty in taking nourishment and the resulting marked emaciation, surgical intervention was decided upon. The operation was performed on August 27, 1925. It was with difficulty that the dome of the diaphragm was reached. There was a suspicious hardness around the lesser curvature of the stomach and the coeliac axis, probably invasion from the lower oesophageal growth. The fundus of the stomach was firmly fixed. A Witzel gastrostomy was done. A snipping from the lower end of the oesophagus was reported as "undoubtedly carcinoma", one from the growth of the lesser curvature was too small for diagnosis.

The patient did well for some time, then gradually declined, and died on November 26, 1925.

CASE 2

S. H., male, aged 45, first seen June 1, 1926.

Complaints—Pain behind the lower end of the sternum, on eating, difficulty in swallowing solids, accompanied by pain, eructation of gas associated with pain, increased salivation, loss of weight, loss of appetite.

Present Illness—Began two years ago. He complained first of a little pain behind the lower end of the sternum with every meal. Frequently, only the first swallow brought on pain and the pain disappeared with the taking of additional food. The pain did not

radiate and it was relieved by bicarbonate of soda. Gas eructations occurred, but no nausea or vomiting. The condition persisted for about two months and was followed by a remission of two months. During the subsequent eighteen months the patient suffered from recurrent attacks of pain, coming with the first swallow and disappearing with the taking of additional food. During the past six months the pain had increased in severity and was not relieved by food or medicaments. At the time of examination the patient complained bitterly of the pain behind the sternum which now came through to the back, and of painful gas eructations. Increased salivation was quite marked and a very troublesome feature. The appetite was poor, and because of the pain the patient feared to eat. The bowels were sluggish, there was at no time diarrhoea or melena. The weight had gone down from 130 to 112 lbs during the course of the illness.

The patient had undergone three complete and separate examinations, with the following results: March, 1926 duodenal ulcer. He was put on a Sippy diet, was better for two weeks, but subsequently the symptoms returned. April, 1926 the examination was entirely negative for organic disease. The case was diagnosed as gastric neurosis. May, 1926 spasm of the lower oesophagus.

Personal History—The patient had suffered from asthma and constipation for twenty years. The asthma was cured two years ago. With these exceptions he had always been well.

Family History—Negative.

Physical Examination—The patient showed marked loss of weight, but was not cachectic. The pupils reacted sluggishly to light and accommodation. There were several capped and carious teeth and a moderate degree of pyorrhea, the tongue was coated. Circulatory system. Pulse 100, regular, of fair volume. Blood pressure systolic 130, diastolic 80. Heart and lungs were negative. The abdomen was flat. There was slight tenderness over the entire abdomen. No masses or organs were palpable. The lymphatic, genitourinary, and nervous systems were negative. Rectal examination was negative.

Gastric analysis Fasting contents 10 cc, no food remnants, no blood. Free HCl was 0, total 16. At the end of one hour free HCl, 20, total, 40.

The urine was negative. Stool, dark brown, formed, with a faint trace of occult blood. The blood Wassermann test was negative. Blood haemoglobin 90 per cent, red cells 4,900,000 per c.mm., white cells, 7,200.

Oesophagoscopy A specimen taken from the lower end of the oesophagus revealed inflammatory cells and a few suspicious cells, but no definite evidence of carcinoma.

X ray The barium suspension entered the stomach without being delayed at the cardia. The fundus was narrow and rigid. The barium could not be forced into it by pressure from below, a small quantity remained caught, and was distributed in an irregular manner in the fundus. The gas bubble was absent, but as the patient swallowed, a little air was seen in the fundus, this, however, quickly left the stomach and was belched up. Whenever this happened, the patient complained of pain behind the sternum. Peristalsis was active. The duodenal cap filled well. The stomach was empty in six hours. Examination of the colon revealed 72 hour stasis. Diagnosis infiltrating growth of the fundus, involving the cardia and causing insufficiency.

On July 29, 30 and 31st, the patient passed tarry stools. By this time he was confined to bed, and had lost considerable weight, he was taking very little food because of the pain and was losing ground rapidly. On August 5th, a Witzel gastrostomy was done. Operation revealed carcinoma of the fundus, involving the cardia, and extending posteriorly to the

pine, and adherent to it. The patient did not stand the operation well, and died on August 11, 1926.

CONCLUSIONS

In both cases errors in diagnosis were made several times. A survey of the literature on the subject reveals the fact that such errors are quite common. The apparent reasons for this have already been considered. If it is kept in mind that lesions of the cardia may give rise to œsophageal and gastric symptoms, and lesions of the fundus to œsophageal symptoms, much could be accomplished toward diminishing the number of undiagnosed cases, and toward making a correct diagnosis earlier.

Carcinoma of the fundus may give rise to œsophageal symptoms only. Such cases are particularly liable to cause errors in diagnosis, since all attention is centred on the œsophagus. Investigation reveals nothing but the presence of œsophageal spasm, and the disease is labelled "functional." Œsophagoscopy may reveal a little irregularity or bulging of the mucosa, but a specimen, taken even from an advanced case, may show no signs of malignancy. The spread of carcinoma is submucous, and unless a negative specimen includes a portion of the submucosa, no value can be attached to the findings. Lesions of the fundus may, by extension, involve the œsophagus, and those of the œsophagus may in a similar manner involve the fundus. Evidence is not lacking that the cardia does not serve as a barrier to the advance of malignant growths, either from the fundus upward or from the œsophagus downward. Furthermore, there is anatomical evidence that such extension does occur, and is quite frequent.

Malignant disease of the gastro-œsophageal junction is so unlikely to be limited to only one of the three situations under discussion, either in actual organic involvement, or in the development of symptoms, that it appears to be unwise to speak of carcinoma of the fundus, of the cardia, or of the last portion of the œsophagus. There appear to be sufficient grounds for referring to cancer of these areas as gastro-œsophageal cancer. A further advantage in the use of this term is that it simplifies the problem of classification, and incidentally makes the literature on the subject more readily available. The use of such nomenclature is sanctioned by precedent—*e.g.*, the term ileo-caecal tuberculosis.

SUMMARY

1 About 15 per cent of all malignant lesions of the stomach are situated at the fundus or cardia.

2 There is no definite symptom-complex pathognomonic of carcinoma of the fundus or cardia.

3 The tendency of malignant lesions of the cardia and fundus to give rise to gastric and œsophageal symptoms, respectively, is responsible for errors in diagnosis.

4 Dysphagia is the most important symptom,

and may not be directly due to the lesion, but to an associated spasm. A slowly developing dysphagia, progressively becoming worse, with remissions occurring early, if at all, is strong evidence in support of a diagnosis of malignancy.

5 Loss of appetite, gas eructations, and pain are the most frequent and early symptoms, but they are present in so many other conditions that they acquire only secondary importance.

6 Malnutrition, cachexia, and loss of weight are late manifestations, and their absence does not constitute evidence against malignancy.

7 Enlarged supraclavicular glands are rarely present, and if present occur late.

8 Achylia and anemia are not reliable signs, but are of secondary importance. If present, anemia is a late manifestation.

9 Occult blood in the stools is an almost constant finding.

10 Œsophagoscopy is of little or no value as an aid to diagnosis, except in carcinoma beginning in the lower œsophagus, particularly in the presence of malignant ulceration.

11 The most important method of diagnosis is careful radioscopic and radiographic examination in all positions. The direct and indirect signs are enumerated.

12 The use of the term gastro-œsophageal carcinoma is suggested for malignant lesions involving primarily the terminal œsophagus, cardia or fundus.

ULTRA VIOLET RADIATION FOR THE GENERAL PRACTITIONER

By R. KING BROWN, B.A., M.D., D.P.H.
(III)*

In this article I propose to deal briefly with the question of lamps as a source of ultra-violet irradiation. I shall not discuss the question of the best type of lamp to use from a purely scientific point of view, especially as the question from that aspect has by no means been settled, though many scientific investigators and clinicians have been and are still working at the matter. Further, as I intend my remarks to refer rather to the requirements of the general practitioner, and not to the hospital or public clinic, where the question of the consumption of electricity is not of such first importance, the economic side of the question will take a paramount, or at least an equal, place with the scientific side.

Most large hospitals generate their own current, and other clinics are assisted on the economic side in various ways, *e.g.*, out of voluntary funds, or by subscriptions or, in the municipal ones, out of the rates. With the general practitioner the matter is on a totally different footing. For reasons of space, time re-

* Article I, *Canad. M. Ass. J.*, March, 1928, xviii, 326; Article II, *Ibid.*, April, 1928, xviii, 465.

quired for supervision, the number of patients who can be treated simultaneously or within a given time, and the amount of current consumed, the type of lamp is most important. Provided he can be guaranteed a sufficient output of ultra-violet rays for his purpose, the purely scientific question of the close similarity or divergence of the spectrum from that of the natural sun is of secondary importance.

TYPES OF LAMPS

Lamps can be broadly divided into two main types, viz., (1) the open arc, and (2) the mercury-vapour lamp.

In the former there are two electrodes, and the current, in bridging the gap between the upper and lower electrode, produces a powerful flame which gradually burns up the ends of these. The variations in this type of lamp are usually due to variation in the composition of the electrodes. They may consist of pure carbon (upper and lower) which is a very common type, or the carbons may be impregnated with various metals such as sodium, magnesium, potassium, iron, tungsten or aluminium, or the cores may consist of the latter metals, or the electrodes may both consist of iron or tungsten, or one of the electrodes may be of iron or tungsten and the other of carbon. Sometimes pure tungsten is used, or more commonly an alloy, as pure tungsten is very expensive.

The carbon arc has been specially developed by the Finsen Light Institute of Copenhagen. The chief argument in its favour is that it produces a continuous spectrum more like that of the sun than any other type of lamp, and that consequently the output of ultra-violet rays, compared with the luminous and heat rays, is better balanced, thus obviating the necessity of supplementing the first-mentioned by lamps producing mainly yellow, red and heat rays. Carbon arcs, besides, do not deteriorate by using, the carbons, it is true, burn out, but as long as they are active the output of rays remains practically constant.

Against these advantages you have the large consumption of current. In the more powerful types 30 to 75 amps (3 to 7 B T U) per hour are required, and in the smaller type proportionately less, 15 to 25 amps ($1\frac{1}{2}$ to $2\frac{1}{2}$ B T U) being a common consumption. Another disadvantage is that they cannot be used in the open air as every draught disturbs the flame and causes the lamp to splutter a good deal. The tungsten arc produces a very large proportion of ultra-violet rays, but the electrodes are very expensive and require frequent renewal. It is a small lamp, simple in construction, but only adapted for special uses, and as I am considering the question of lamps more for general use, it need not be referred to again.

The second type of lamp referred to above is known as the mercury-vapour lamp. The mercury-vapour acts as a bridge of high resistance between the positive and negative poles, becomes intensely hot, and gives out a powerful light in which violet, indigo and green largely predominate in the visible spectrum, while the proportion of ultra-violet rays compared to the visible is very much greater than in the case of the carbon arc, more than 20 per cent of the ultra-violet output being between 3,900 Å U and 1,850 Å U. The mercury is generally contained in a sealed quartz tube burner, and the current (which must, as a general rule, be in one direction only) passes from the positive to the negative pole. If an alternating current be used it must be partially rectified so as to insure that it is unidirectional. There is another type in which the quartz tube is open to the air, with a suitable arrangement to prevent the mercury-vapour from getting into the air of the room. This type is said to be more easily cleaned and not to deteriorate so rapidly as the sealed form. A good representative of the former is the Hanovia quartz mercury-vapour lamp, and of the latter the K B B (Kelvin, Bottomley and Baird) lamp. Both these lamps are air-cooled, but there are also water-cooled M-V lamps, such as the Kio-mayer. The lamp is cooled so that it may be pressed against the skin and the blood squeezed out, enabling the U V rays to penetrate more deeply in some cases.

The air-cooled sealed quartz mercury-vapour lamp is most used on the Continent, especially in Germany, where its properties have been and are still being carefully investigated. In a recent visit to Munich, Berlin and Hamburg, we found this type of lamp almost exclusively used in hospitals, public and private clinics.

The advantage of the mercury-vapour lamp of whatever type is that it only uses about one-fourth to one-fifth or less of the current required for the carbon arc, i.e., 3 to 5 amps per hour ($\frac{1}{4}$ to 1 B T U, or $\frac{1}{2}$ d to 2 d of electricity at 2d per unit power per hour), as against 10 to 75 amps per hour (1 to $7\frac{1}{2}$ B T U, or 2d to $1\frac{1}{3}$ per hour) for the latter, according to the size of the lamp. As stated above, the spectrum is very rich in ultra-violet rays, but the intensity or quantity, as distinct from the quality, of the different parts of the spectrum differs greatly both from that of the carbon arc and the sun. The range of ultra-violet light wave-lengths is much greater than that of the sun even on our highest mountains, but then intensity in proportion to the light rays below the green and the infra-red given out by them far surpasses the carbon arc or the sun. The intensity of their ultra-violet rays is also very uneven, certain groups being much more intense than others.

Peemoller shows this in another way. If you

take the Dorno rays, which are important therapeutic rays and lie between 3132 and 2894 Å U in a mercury-vapour lamp at 220 volts alternating current (the strongest medical U-V lamp so far made is a 100 per cent unit) and test them with the Dorno cadmium cell you get the following results —

1 Mercury vapour lamp (artificial alpine sun, 220 volts alternating current)	100%
2 Peemoller lamp, carbon arc, aluminium core carbons horizontal	72.1%
3 Mercury vapour lamp, (110 volts direct current, artificial alpine sun)	44.3%
4 Peemoller lamp, carbon arc, calc. core, carbons vertical, max	43.5%
5 Carbon arc, iron core	14.1 to 7.2%
6 Old carbon arc with wick and homogeneous carbons	0.2%

Owing to the high intensity of the ultra violet rays in the quartz mercury vapour lamps the exposures to them are only about a quarter or less of those required by the carbon arc to produce an erythema. Thus doses of from 1 to 5 minutes, according to the condition of the patient as to pigment, use, etc. will correspond to from 5 to 25 minutes of a carbon arc. It is evident therefore that with the mercury-vapour lamp we have shorter exposures and can get through

a much larger number of patients in a given time. It is probably these factors which largely determined the preference of German and other continental workers for this type of lamp. Owing to their poverty in yellow, red and heat rays some clinicians make use of a heat-producing lamp—of which there are a number of useful models on the market—simultaneously with or immediately preceding the M-V lamp, so as to intensify the action of the latter. The method of using this will be discussed when we come to speak of the use of the lamp in disease in the next article.

One disadvantage of the M-V lamp is that the quartz burners when new give off much more intense ultra violet rays than when they have been a long time in use, owing to a rearrangement of the molecules of the quartz. When therefore they have been in use from 1000 to 2000 hours, they should be reburned. This is a somewhat expensive process and costs £3 or £4.

In the next article a short account of the technique of using the lamps will be given, and the diseases in which they so far have proved useful. (*The British Journal of Actinotherapy*, May, 1928, iii, 32)

Men and Books

RICHARD MEAD A FATHER OF PREVENTIVE MEDICINE

By W. H. HATTIE, M.D.

Hallifax

In the summer of 1696, a new doctor made his appearance in Stepney, a young man who had just returned to his native town after six years of study at Utrecht, Leyden, Florence, Padua, Naples and Rome. At Leyden he had been the intimate friend and fellow student of Boerhaave. At all the places visited he had associated with men of various professions and had had opportunity to gratify and develop a native taste for literature and art. At Padua he had obtained the degree of Doctor of Philosophy and Physic. He had come back to England with a naturally engaging personality quite unspoiled, and able to adapt himself gracefully and easily to any social or other situation which might develop. Moreover, he was sagacious enough to appreciate the value of cultivating certain aids to success. And so he quickly acquired a clientèle and a reputation, and, as he found himself able to move from his original locale at Stepney to more and more

consequential locations, he came to be much discussed in medical and other circles.

Radcliffe, still in high fame and still crude in his bluntness, decided that this young man should be subjected to a crucial test. A dinner party was arranged and the aspiring young man was brought into the company of Radcliffe's most bibulous friends. The intention was to bring humiliation on him by making him highly intoxicated in the presence of his professional elders. But the young man was more wary than his elders, and presently the whole party with the exception of Radcliffe and his youthful guest were under the table. Any aversion which Radcliffe may have entertained vanished at once. "Mead," he exclaimed, "you are a rising man! You will succeed me!" Note now that Radcliffe was vain and Mead adroit. "That, sir, is impossible," Mead replied, "You are Alexander the Great, and no one can succeed Radcliffe. To succeed to one of his Kingdoms is the utmost of my ambition." "By the gods," said Radcliffe, "I'll recommend you to my patients!" And so the evening ended happily.

Next day Radcliffe called at Mead's office and discovered him reading Hippocrates. "Do you read Hippocrates in Greek?" he thundered

Modestly and fearfully Mead admitted that he did, greatly dreading that his scholarship would prove offensive to the great man Radcliffe's son was sullen as he said "I never read him in my life" But Mead was again ready "You, sir, have no occasion You are Hippocrates himself" The peril was past, and Mead was secure in Radcliffe's affection

With this introduction to Richard Mead, let us investigate him a little further He was born at Stepney, August 11, 1673 His father, Rev Matthew Mead, a nonconformist minister and a writer on theological subjects, had been ejected from his charge some eleven years before, but possessed sufficient private fortune to maintain his family and to continue his ministrations to the nonconformists of Stepney Eleven years after Richard's birth, the Reverend Matthew was suspected of designs against the government, and fled from Stepney to the safer place known as Holland Up to this time, Richard had been tutored by another nonconformist minister (John Nesbitt), and now he was sent to a classical school kept by a former second master of Eton, Thomas Singleton, likewise a nonconformist Under Singleton, Richard acquired a thorough grounding in Latin and Greek At the age of seventeen he went to Utrecht, and, three years later, to Leyden On completing his academical studies, he accompanied two celebrated gentlemen, (of whom one, Dr Thomas Pellett, later became President of the College of Physicians) on the journeyings to which reference has already been made Thus prepared, he returned to Stepney and to the house in which he was born, to begin his professional career and to associate himself closely with nonconformists

Early in 1703, when he was not quite thirty years of age, he was appointed physician to St Thomas's Hospital This made desirable his removal from Stepney to a place more convenient to the hospital A few years later he was astute enough to secure a house in Austin Friars, just vacated by the death of a busy practitioner And when Radcliffe died (1714), the circumspect Mead, who had already acquired the major part of his practice, took possession of Radcliffe's mansion in Bloomsbury Square, actually before the burial of Radcliffe from his country place at Carshalton, where he had died Some days before his death Radcliffe had presented Mead with the famous Gold-Headed Cane, which afterwards passed in succession to Askew, Pitcairn and Baillie the memoirs of which are so entertainingly related by MacMichael So Mead succeeded Radcliffe, even as the latter had prophesied

Mead, now about forty-one years of age, was thus firmly established In the enjoyment of an income of between £5,000 to £6,000 a year—

in one year it reached £7,000—he was able to indulge his fondness for books and works of art, and to provide liberal entertainment for the host of prominent people who sought his friendship Of these things we must say more later Meantime it should be stated that his success was not due entirely to sagacious flattery and an instinct for sensing opportunity for material betterment Once he had an urgent summons to attend a celebrated Duchess, and arrived at her home a bit unsteady as a result of somewhat free indulgence in the cup that both cheers and merrymakes While feeling her pulse his foot slipped awkwardly, and he confessed aloud "Drunk, yes, quite drunk!" The Duchess took this to be the diagnosis of her own condition, and told Mead that if he would keep her secret she would recommend him Her recommendation aided his rise to fame and opulence But, apart from all fortuity, Mead was a consistently hard worker, reader and thinker Recognition of his qualities led to great demand for his services as practitioner and consultant He wrote considerably, and several books have come down to us from his pen The first of these, his treatise on poisons, appeared in 1702, and "De Imperio Solis et Lunæ in Corpora Humana" in 1704 In 1707 he was diplomated M.D. by the University of Oxford Among other distinctions were appointment as lecturer in anatomy to the Company of Barbers and Surgeons, membership in the Royal Society, and fellowship in the College of Physicians In 1744 he was offered the presidency of the college, but declined the honour

During the last illness of Radcliffe, that physician to royalty was unavailable when Queen Anne lay on her death bed, and Mead was summoned in consultation It will be remembered that the time was one of much intrigue Three years before, Anne had wearied of her erstwhile favourite, the Duchess of Marlborough, and the great Duke also presently came into disfavour, the Whigs lost their domination, and the Tories gained the ascendancy at court, although the strength of the two parties was fairly well matched The Tories favoured the Stuart Pretender, the Whigs looked to Hanover for a successor to the throne Now that the Queen's demise seemed imminent, partisans of each side hovered about the court It was important to the Stuart cause that the Queen's life should be prolonged, as the Pretender was abroad, while a representative of the Hanoverian house was on the spot The court physician, though perhaps fully cognizant of the nearness of death, feared under the embarrassing conditions to tell the truth Possibly, Mead might have gained favour with the Tories by a discreet silence, but possibly, too, he saw

advantage to the Whig cause (which he espoused) by frank expression of his opinion. At any rate he declared and made public his declaration that the Queen would not live an hour. The announcement was vital to the Jacobites who as we have seen needed time for the maturation of their plans and who seemingly accepted Mead's verdict as the death knell to their hopes. One historian comments: "It has always been considered that the prompt boldness of this political physician occasioned the peaceable proclamation of George I. The Queen's demise in one hour was confidently predicted by her Whig doctor. He was often taunted afterwards with the charge his countenance expressed when the royal patient on being bled, recovered her speech and senses." Perhaps the charge may have been feigned rather than real. At any rate we see Mead in the role of a political partizan almost that of a king maker. Those who have read "The Gold Headed Cane" will remember that Radcliffe good Tory that he was, was accused of having negatively murdered Queen Anne by declining to attend upon her and was threatened with assassination. Mead the Whig on the other hand, although suspected of having desired her death, does not appear to have incurred any popular disrepute by his association with the affair. This may be taken as further evidence of his adroitness.

One of the notable features of "The Gold-Headed Cane" is that it tells much more of other personages than of the characters it professes to delineate. At the risk of a similar offence, and at the further risk of making this paper too anecdotal, I venture to bring Radcliffe again into the story. Mead had noted that there was no Bible in Radcliffe's house, and was seemingly rather disturbed by the circumstance. In his tactful way he presented Radcliffe with a very beautiful Bible, formerly the property of King William, who had been a patient of Radcliffe's, as a memento of his late Majesty. Radcliffe, much pleased with such a gift, resolved to read the Book, and got as far as the middle of Exodus before his resolution failed. Had he gone farther he might have given his protégé other advice than that given in one of his confidences: "Mead, I love you, and I'll tell you a sure secret to make your fortune—use all mankind ill." We shall see that this advice was not accepted, and Mead chose rather, as much as in him lay, to live peaceably with all men. Other men, however, did not always choose to live peaceably with him. Some, perhaps jealous of his success, lampooned him without mercy. Such usually hid behind anonymity. But Woodward, Professor of Physic at Gresham College, attacked him openly, and in such an insulting manner, that Mead was infuriated and challenged him

to a duel. Accounts differ as to the skill displayed but Woodward was disarmed and ordered to beg for his life. "Never, till I am your patient" was the happy retort which so appealed to Mead's sense of humour that the incident was at once ended. Gath's comment on this affair was: "Physicians if they're wise should never think of my arms but such as pen and ink."

In our day some at least of Mead's conduct would be considered to justify lampooning although it was seemingly not regarded as quite unprofessional in his time. Coffee houses were very popular resorts for the gossips of all grades of society and Mead followed Radcliffe's example by patronizing them and meeting there any apothecaries or other types or practitioners who wished to consult him. In the mornings he went to Tom's, in Covent Garden and in the evenings to Batson's, in Cornhill where he would advise such worthies in a half guinea per consultation, prescribing, therefore without seeing the patient. His usual fee for persons in good circumstances, was two guineas. It is related too, that he realized large sums by the sale of worthless nostrums. In other respects he seems to have lived blamelessly, though it is reported that he dabbled in stocks. It is not to his discredit that he was bequeathed two large fortunes.

Mention has already been made of Mead's earlier ventures in medical literature (1702-1704). Seemingly he was so engrossed with other activities that about sixteen years passed after the appearance of "De Imperio Solis et Luna" before another work issued from his pen, and this followed a request from the government to advise precautionary measures against the plague, then prevalent in France. Fifty years before, plague had caused 90,000 deaths in England, so its return was naturally dreaded. French physicians did not consider the condition to be contagious, and British commercial interests wished this opinion to prevail, but the government was doubtful. So, in 1720, Mead's advice was sought. After investigation he concluded that the condition was contagious, and set forth his opinions in "A Short Discourse Concerning Pestilential Contagion," which ran through seven editions in a year. In this he advised strict quarantine against infected countries and the isolation of infected towns, and to this extent was in agreement with the common usage of the time. But the practice of shutting up an infected house with all its inmates for a month after the disappearance of the disease he characterized as futile and cruel, and as favouring concealment. He advised that a Council of Health should be appointed for each town, charged with the duty of removing the sick to a distance of three or four miles from the town, and also of

cleansing and removing and supervising contacts. This was to be done at the public expense. In this we note the rudiments of provision for isolation hospitals and for asylums for contacts. Moreover, he urged cleanliness of streets and houses and avoidance of all unnecessary assemblies. He expressed little confidence in the fumigations which were popular, but made a partial reservation in favour of "the smoke of sulphur," which "abounds with an acid spirit which is found by experience to be very penetrating." Mead is credited as being the first to advocate a rational use of quarantine measures, and is spoken of as the earliest of the "Fathers of Preventive Medicine."

After the appearance of the "Short Discourse," another period of several years elapsed without literary productivity except for new editions of his first books. Meantime he was growing old, and felt the need for relaxation from the stress of so active a practice. He wished, moreover, for leisure to ponder over his experiences and to make use of his pen again. So he retired from much practice, and in 1747 brought out his "Treatise on Smallpox and Measles," written in Latin. He was then nearly seventy-five years of age, but, according to the author of "Lives of British Physicians," "the purity and elegance of style exhibited in this work have attracted the admiration of scholars." More than a quarter of a century before, impressed by the story of Lady Mary Wortley Montague, he had been a strong advocate of inoculation of smallpox, and had (1721), at the instance of the then Prince of Wales, afterwards George III (to whom he was appointed physician), experimented successfully upon several condemned criminals, who were pardoned after the demonstration. He and Friend (to whom we shall again refer) had urged that purgatives prevented or mitigated the severity of the secondary fever of smallpox. To this treatise he appended a translation of Rhazes, the only remaining Arabian MS. of whose essay was loaned to him by his friend Boerhaave for the purpose.

In the following year (1748) he published his "Medica Sacra," a literary curiosity which attracted much attention, in which he commented on the more remarkable diseases mentioned in the Bible and stated his belief that the demons mentioned therein were lunatics or epileptics. In 1749, he wrote "On the Scourge" and, in 1751, "Monita et Præcepta Medica," which is said to be the most important of his works. In this he discussed frankly his reflections upon his own experiences, and gave sage advice on the presentation of health of mind and body. This work is regarded as greatly superior to contemporary works of a similar kind.

It will be noted that much of his effort was in the nature of what we now term public health work. Further evidence of his interest in this field is afforded in his advocacy of a method of ventilating ships, etc., which was originated by Sutton. He interested fellow members of the Royal Society in this matter, and after ten years of persistent effort finally succeeded in inducing the Lords of the Admiralty to have the method introduced in all the ships of His Majesty's navy.

To hark back to his first book, that on poisons, Mead appears in it as one of the early votaries of experimental physiology. He provoked vipers to strike at hard bottles to secure venom which he injected into the veins of animals. He mixed venom with human blood in an endeavour to prove his theory that the effect of poison was due to mechanical action on the blood, a theory which he abandoned in a second edition of this work, published forty years after the first. He also tasted snake venom, in order to learn whether or no sucking a snake bite would be dangerous.

Mead was on intimate terms with the more noted of his medical contemporaries, notably Gaith, Arbuthnot, Friend, Sloane and Cheselden. Seemingly, he often demanded that Cheselden should be associated with him in consultation, especially if surgical questions were involved. We get an indication of this in these lines of Mead's intimate friend Pope:

"Weak though I am of limb, and short of sight,
Far from a lynx, and not a giant quite,
I'll do what Mead and Cheselden advise,
To keep these limbs, and to preserve these eyes."
—Pope, (*Imitations of Horace*)

But Mead's interests were by no means restricted to medicine. As has already been said, he had a great love for literature, for art, and for antiquities, and was an enthusiastic collector in all these lines. Some time after moving from Radcliffe's old house to a very pretentious residence in Omond Street (1719), he added a gallery for the accommodation of his library and museum (1732). This was a meeting place for all types of celebrities from all parts of the world, and "The Gold-Headed Cane" tells of some of these gatherings. Mead's linguistic accomplishments enabled him to converse with practically every visitor from abroad, if not in his native language at least in one with which both were acquainted. This fact, together with the certainty that a brilliant company would be met there, doubtless accounted in part for the extraordinary attraction of Mead's house for distinguished visitors to London. As he was well known to the literati, the antiquarians and the art-lovers of Europe, with many of whom he was in correspondence and with whom he exchanged curios and rarities, he would be well

advertised abroad At least two of the crowned heads of Europe, the Kings of France and Naples, contributed to Mead's collection The author of "Lives of British Physicians" (1830), tells us that Mead's "collection of statues, coins, gems, prints and drawings will probably forever remain unrivalled among private amateurs" In his library were to be found the most rare and ancient works, Oriental, Greek and Latin manuscripts forming no inconsiderable part His pictures alone brought £3,400 at the sale after his death He kept constantly in his employ several scholars and artists, who laboured at his expense for the benefit of the public For his motto was "Non sibi sed toti" He "excelled all the nobility of his age and country in the encouragement which he afforded to the fine arts, and to the study of antiquity" (Lives of British Physicians) So it is not surprising that his house should have been a favourite place with those of artistic and intellectual tastes

One of the pleasantest of the parties which met there is described by "The Gold-Headed Cane" Friend, who was a member of parliament had been sent to the Tower on being suspected of sympathy with Bishop Atterbury in his activities in behalf of the Stuart cause Mead had been active in the endeavour to secure his release, but it was not until Sir Robert Walpole called him professionally that he made real headway He would treat Walpole only on condition that Friend be given his liberty And so it happened that the History of Medicine which Friend had commenced to write during his imprisonment was destined to be continued in more advantageous surroundings On the evening of the day following his release, a large and distinguished party gathered at Whig Mead's to celebrate Toiy Friend's return to the world, when Mead presented Friend with the fees he had collected from the patients of the latter whom he had attended in his absence, amounting to more than 5,000 guineas

Mead not only contributed freely to the institutions in which he was interested, notably the College of Physicians (for which he had executed the well-known bust of Harvey) and the Foundling Hospital, but his charity was unbounded, and he was ever ready to give his

services gratuitously Among those who benefited by his free ministrations was a clergyman, a personal friend who officiated at one of Mead's marriages After the ceremony this gentleman slipped away unnoticed, and Mead sent his brother to him with a handsome fee To this the clergyman reacted as follows

"To the Doctor, the Parson's a sort of a brother,
And a good turn from one deserves one from the other,
So take back your guineas, dear Doctor, again,
Nor give—what you so well can remedy—pain
Permit me to wish you all joy and delight,
On th' occasion that brought us together to night,
May health, wealth and fame attend you through life,
And ev'ry day add to the bliss of your wife "

Nor was Mead content with being himself a benefactor, but he influenced others to contribute of their substance to various good works Conspicuous in this particular was his success in persuading Thomas Guy to spend much of his fortune in building of the hospital which bears his name

It is not surprising that one of such artistic tastes should be inclined to live extravagantly In addition to his elaborate city house, Mead maintained a country place near Windsor, to which he drove in a coach and six He spent so freely and gave so generously that, notwithstanding the many years in which he enjoyed a large income and the legacies he had received, his estate netted only about £20,000

Towards the end of his long life, his eyesight failed, and his physical and mental powers waned, but fortunately death came soon after these deprivations He died on the 16th of February, 1754, at the age of 81, after five days of confinement to bed He was buried in the Temple Church In Westminster Abbey and in the Royal College of Physicians may be seen busts, suitably inscribed, of this wonderful man

After his death, it was said of him, to quote The Gold Headed Cane, "That of all physicians who had ever flourished, he gained the most, spent the most, and enjoyed the highest fame during his lifetime, not only in his own but foreign countries" And his contemporary and friend, Samuel Johnson, declared "Dr Mead lived more in the broad sunshine of life than almost any man "

The city of Nurnberg, among its many distinctions may claim to have been the place of publication of the first pharmacopœia, which was compiled in 1535 by Valerius Cordus, after consultation with the physicians

of the city This work, at first restricted to galenicals, went through several editions That of 1613 was revised by Minderer and was the first to admit mineral preparations

of these notes that the subject of rheumatic diseases appears too often, but the many problems connected with this important group of disorders continue to attract great attention in this country. The Ministry of Health has just issued an important report on the provision of treatment for chronic arthritis, and at Bath, during last month, the large attendance of investigators, delegates and distinguished visitors from abroad, at a conference on rheumatic diseases, testifies to the interest shown in this subject. In his introductory address, Sir George Newman, Chief Medical Officer of the Ministry of Health, stated the problem, which was in point of fact how best to organize the campaign for the conquest or control of rheumatism. Out of the many papers which followed emerged many interesting facts divided broadly into those concerned with the social aspects, with the causation of rheumatism, and with the treatment of the disease. In the first place the economic burden of rheumatic infection is very large, and mortality statistics give little or no indication of the harm done to the community. Secondly, while we appear to know little about the exact causation, we know a lot about certain contributory factors and predisposing causes, and it should be possible to organize a "prevention campaign." Thirdly, treatment must be organized in efficiently equipped centres, with specialist "teams" and ample physio-therapeutic appliances. It is perhaps a pity that the acute rheumatic infections of childhood and the more chronic manifestations in adults were discussed at the same conference, for, partly because of the link by name, there is already too much muddled thinking about the connection, if any, between these two disorders. However, the conference was voted a great success and it is hoped that its fruits will soon be demonstrable.

Sunlight and Health—The month of May, except for its last few days, has been most depressing as far as weather is concerned and the opening of the London "season" has been marked by low temperatures, rain nearly every day and thunder storms from time to time. It may have been these factors which led the *Times* to bring out on May 22nd a big supplement called "The Sunlight and Health Number." It contains a lot of interesting material, especially about the discovery of vitamins, and the recent work on vitamin D and its preparation from ergosterol receive attention. "The days of darkness" writes the editor, "are also days of death and disease," and charts are shown which indicate the close relationship between the amount of sunlight and a low death rate. From October to March this rate is higher than for the other six months and it is during the summer that we store our sunlight for the winter. "In the early spring the

storehouse is tending to become empty" and it is therefore reassuring, during such weather as we have been experiencing, to know that "bottling sunlight" is an important British industry, and there is already on the market a large choice of ways in which we may keep our health until such time as the English summer, already a subject for mirth, arrives. Hope deferred need no longer make the heart sick, say the experts, if we take enough vitamin D.

ALAN MONCRIEFF

The Edinburgh Letter

(From our own correspondent)

A Famous Criminal Case—The news of the death of Madeleine Smith in the United States will stir many an old memory, recalling as it does one of the most famous of Scottish criminal trials. Madeleine was the eldest daughter in a highly respected Glasgow family, her father being an architect by profession, living in what was then a fashionable neighbourhood of the city. In 1857, when only twenty-one, she was charged with murdering Pierre Emile L'Angelier, who was ten years her senior, by poisoning with arsenic. L'Angelier was a clerk in a Glasgow office on ten shillings a week. This hopelessly ineligible suitor used to visit Madeleine clandestinely, first in her father's house in India Street, and later at Blytheswood Square. She seems to have been deeply infatuated with him and during their friendship wrote that remarkable collection of letters, which were exhibited in court and proved such a feature of the case. Subsequently she tired of him and wished to end an intrigue that was likely to interfere with the matrimonial plans formulated by her parents on her behalf. L'Angelier threatened to blackmail her by showing the letters he had received from her to her father. Madeleine appeared to take L'Angelier back to favour, and his visits were renewed. On March 23, 1857, L'Angelier died in his lodgings. A post-mortem examination revealed the fact that death was due to arsenic poisoning, 82 grains being found in his stomach alone. Madeleine Smith's letters were found in his rooms. She was arrested and charged with poisoning her lover, by giving him on three different occasions a cup of coffee containing arsenic, through the basement window of the house in Blytheswood Square. At the trial the letters were produced and caused a deep impression, not only by their passionate appeal, but also by their conspicuous merit. The speeches on both sides were brilliant. That by John Inglis, the Dean of the Faculty of Law, in her defence has long been considered a model of excellence. The distinguished beauty of the accused, the despicable character of the deceased, and the fact that poisoning trials are rare in Scotland, stirred public opinion to the

utmost. After a trial which lasted nine days, during which Madeleine was the most self-possessed person in the court, the jury returned the eminently fair and cautious Scottish verdict of 'non-proven'.

"All Great Britain," states F. Tennyson Jesse in the *Trial of Madeleine Smith*, 'was agitated over the trial, and there were three points of view held by three different schools of thought. There were strong pro-Madeleinites who contested that she was innocent, and that L'Angelier had committed suicide, equally strong anti-Madeleinites, convinced that murder had been committed by her, and that she should pay the penalty, a third school, in which probably most students of the case have found themselves ever since, which declared in effect—'Probably she did it, but anyhow he deserved it'."

Madeleine Smith, the chief actress, was possibly the last survivor of that intensely moving drama, the last act of which was fought out in the High Court in Edinburgh. The eminent counsel, the witnesses, the spectators who fought for admission, must mostly have been gathered to their fathers. Yet, still, we meet people who will give you their impressions of the case, (they always seem to have known some one who was present,) discuss the pros and cons, and tell you what they pretend to know is the correct solution of this unsolved mystery. Prejudice dies hard. One meets few Madeleines in Scotland. Even now it is not a popular Christian name to give to a baby girl. And, as though it boded ill omen, silk, the material she wore during the trial, is said to have suffered a severe slump for many years afterwards. So much for 'old wives' tales.' Whether she did, or whether she didn't, the old lady has guarded her secret well, in the seventy-one years of obscurity which have elapsed since, in all her youth and beauty, and apparently unmoved, she faced her terrible ordeal.

The Royal Edinburgh Maternity Hospital—It is one of the features of the voluntary hospital system that management committees always seem to be asking for money. At the annual meeting of subscribers of the Royal Edinburgh Maternity and Simpson Memorial Hospital, Baillie, Dr Nasmyth, in an appeal for funds so urgently needed, pointed out that the number of deliveries in the hospital during 1927 was 2,094, which constituted a record in its history. Taking the total of indoor and outdoor cases last year, the gratifying fact was disclosed that 38.6 per cent, or more than one-third of the whole births of Greater Edinburgh, took place under the supervision of the staff of this old established institution. The antenatal clinics continued to grow in popularity and usefulness. During 1927, 10,000 visits were paid to these clinics. As a natural growth of the antenatal work, the post-natal clinic was now in

action. More than 1,000 visits had been paid to it since its inception in February, 1927, and the results had been most satisfactory. The hospital had maintained its front rank position as a midwifery school. During the year 83 nurses and 287 medical students had been trained. Dr Nasmyth referred to the proposed amalgamation of the hospital with the Royal Infirmary. The site of the proposed extension of the Infirmary, which is at present occupied by George Watson's College for boys, will not be available for some time, but, when it is, the new Maternity Hospital will occupy one of the finest positions in the city. Dr Nasmyth asked for a stabilized annual income of £40,000, to enable the hospital to carry on the excellent work in the same manner as it has been doing during the last eighty-three years.

A New Sanatorium—They never do things by halves in Glasgow. Work is now proceeding on a £500,000 sanatorium, to accommodate 464 patients. Ground for this institution was acquired at a cost of £17,000 at Mearnsburn in 1913. Owing to the outbreak of war the proceedings were interrupted. It is expected that the sanatorium will be completed and ready to receive patients by 1930.

Appointment—At a meeting of the University Court, Professor Alfred E. Cameron, Professor of Zoology and Entomology in the University of Saskatchewan, was appointed Lecturer in Medical Entomology in the Department of Natural History, as from October, 1928.

Veneral Diseases—The Edinburgh Corporation Veneral Diseases Bill failed to receive a second reading in the House of Commons. The object of the Bill was to give the Corporation compulsory powers in relation to the treatment of venereal disease, enabling them to deal effectively with defaulters who had failed to continue treatment. The main fear of those opposing the Bill was that compulsion would again drive the disease underground, and ruin all the success of the Voluntary System. Sir John Gilmour, the Secretary of State for Scotland, advised the House to reject the Bill. His speech settled the fate of the Bill, which was defeated by 156 votes to 95. On top of this comes the announcement that the corporation of the City of Glasgow have adopted a Bill for the prevention, notification and treatment of venereal disease. The Bill seeks powers more drastic than the recently rejected Edinburgh Corporation Bill. It was pointed out that compulsory treatment is being gradually forced on local authorities, and it is estimated that there are 100,000 sufferers from this disease in Glasgow, of whom 75 per cent are innocent cases.

Research in Animal Breeding—The constitution of the animal breeding committee to be set up by the University Court of Edinburgh, in connection with the Department for Research in Animal Breeding, has now been approved by

the Board of Agriculture and the University Court. The University Court have taken over the financial responsibility for the department, and are now taking the necessary steps to constitute the committee. The new institution in connection with the department is on the south side of the City of Edinburgh. There, some thirty acres of land are at present used for the maintenance of experimental animals. The department uses six laboratories in the chemistry building of the University, which is in the immediate vicinity. Lord Woolavington recently donated £10,000 towards the endowment of a chair of animal breeding in the University. The Department has been in existence on a small scale since 1920, and recently received an offer of £30,000 from the International Education Board, contingent upon a further £30,000 being provided by the University and other private sources. Work has been done in connection with the study of sheep's wool, and experiments have been undertaken to investigate the inheritance of various colours and patterns. A malformation of the limbs of newly born lambs, who either are born dead or die shortly after birth, has been found to be hereditary. An analysis of the Clydesdale breed of horses has been continued. Investigations dealing with superfetation in pigs, and the increase of winter milk production in goats, and various other subjects, have also been in progress.

GEORGE GIBSON

THE MODERN METHOD OF PRESCRIBING

To the Editor

The contribution of Dr. O. S. Gibbs on the Modern Method of Prescribing in your May Journal is of considerable interest to pharmacists.

It is bad enough to have one system of weights and measures for buying and selling and another for dispensing prescriptions, without having all the complications that arise out of differences between the Imperial and American systems in both of these circumstances, and on top of that the metric system in the pharmacopœias.

It would help the situation greatly and indeed would be a godsend to pharmacy, if medical practitioners would abandon the apothecaries' system and adopt the metric.

Three or four dollars would buy all the metric weights and measures needed for dispensing, and "converting" from one system to another would soon cease so far as dispensing pharmacy is concerned. The big difficulty arises in the learning of metric doses by prescribers. Every pharmacist is taught the metric system.

The change would not involve as much difficulty as some imagine. It does not take

long for one accustomed to pounds, shillings and pence to learn the value of dollars and cents. The metric system is exclusively used in general science, and is being increasingly employed in medical texts. So much so, that readers who cannot "visualize" metric quantities are under a serious handicap. This would be overcome so far as medical men and pharmacists are concerned in a very short time, if metric prescription writing were to become general.

Your editorial comment on Dr. Gibbs' article seems to imply that the only objection to "single dose" prescriptions is the burden of multiplication placed on the dispensing clerk in the drug store. This burden is more imaginary than real, since it is one of the functions of a dispenser to check the doses of a prescription, he shares with the prescriber in the legal responsibility for any injury that may occur through an excessive dose. Multiplying is surely not more difficult than dividing, which must be done in determining the dosage.

As it is, the dispenser is accustomed to single dose prescriptions in powders, pills, etc., and this type of prescription would be no more difficult in mixtures. It probably would be less of a burden on the dispenser to complete the quantities to be mixed from a single dose prescription than upon the prescriber to complete the quantities to be written for a "multiple dose" prescription.

The former type is more simple and its general adoption where applicable would tend to remove the uncertainty that sometimes occurs as to the quantity a prescriber desires.

G. A. BURBIDGE,
Chairman of Council,

Canadian Pharmaceutical Association

Halifax, May 25, 1928

INNERVATION AND TUMOUR GROWTH

To the Editor

In July, 1927, my book "The Cancer Mystery Solved" (London, The C. W. Daniel Co.) was published and on sale. In the book, I show that the nervous system performs a vitally important part in tumour formation and growth, including that of cancers, which are dealt with in "a complete series of comprehensible steps." On the cover of the book occurs the following: "The author of this book claims to have elucidated the origin and nature of cancer, and to have brought to his support evidence strong enough for proof. He shows that the rôle of the nervous system, in cancer production, has been almost entirely overlooked, notwithstanding that cancer only occurs in vertebrate animals."

On February 17, 1928, there appeared in the *Liverpool Echo* an article headed "Nerves in

Human Cancers" "An Important Canadian Discovery" The article was cabled from Montreal, and was stated to be "According to an official statement from the McGill University Pathological Institute" The article went on to show that, according to the statement, Dr Horst Oertel, Director of the Institute, working with associates, had succeeded in establishing the fact of the presence of nerves in human cancers "This," says the statement, "has so far not been recognized, and has even been denied by high authorities on cancer"

On February 18, 1928, I sent an explanatory letter, a copy of my book on cancer, and a cutting from the *Liverpool Echo* containing the article, "Nerves in Human Cancers" to a recognized and accepted authority on medical ethics and practice In his reply, he said, "I have received your letter of the 18th of February with a cutting from the *Liverpool Echo* of the 17th of February, and also a copy of book, 'The Cancer Mystery Solved' The announcement in the *Liverpool Echo* refers to an official statement from the McGill University Pathological Institute, and to an article by Dr Oertel, the Director of the Institute, to appear in February issue of *Canadian Medical Association Journal*

"This statement claims that the presence of nerves in human cancers and other malignant tumours has so far not been recognized, whereas your book, published in June, 1927, deals with that subject in detail

"In these circumstances I think your proper course is undoubtedly to write to Dr Oertel, challenging the accuracy of the official statement, and pointing out the real facts"

In the course of his letter, he also advised me that in certain circumstances it might be advisable and necessary to publish my claims in the medical press

On February 21, 1928, I wrote Dr Horst Oertel, Pathological Institute, McGill University, Montreal, Canada, challenging the accuracy of the report issued by the Pathological Institute My letter to him was registered, and I also sent him a copy of my book on cancer by registered post I have had no reply Meanwhile, I have had great difficulty in obtaining a copy of the February number of the *Canadian Medical Association Journal*, and have only recently succeeded in so doing Dr Oertel's article is entitled "Innervation and Tumour Growth," and begins thus "In searching the vast literature on tumours, only occasional and fleeting references concern nerves in relation to tumour growth Even in the larger, comprehensive works this matter is dismissed with a few words Accordingly, the nervous system appears as of little, if any, account in the development and life of tumours" It is quite evident these views are

in need of drastic revision In the same connection, I may point out, that in 1921 in the *British Medical Journal*, I wrote that cancer probably owed its initiation to loss of normal trophic nerve influence caused by an irritant, and not to the action of the irritant on the cells themselves, as many generations of cells die off and are replaced by fresh cells before a local irritant causes cancer as a rule Shortly after my article appeared in 1924, there was a meeting at the Medical Institute, Liverpool, to discuss Dr Young's microbial theory of cancer At this meeting (reported in *BMJ*), Prof Paul of Liverpool, expressed the opinion, in view of his extremely wide surgical experience, that the nervous system was an important factor in cancer formation My book on cancer goes in minute detail into the initiation and mode of growth of all tumours, including cancers, and shows exactly the rôle of the nervous system in their formation and growth

It is very interesting, as it adds further concrete proof to my thesis on cancer, to see, according to Prof Oertel's article, that, "Prof Beattie, formerly of University College, London, now of the Anatomical Department of McGill, who kindly looked over some of these slides, tells me that these finer fibrils remind him of the embryonic nerve branches in the development of the stomach I leave for the present undecided whether this has any particular significance in regard to growth of immature tumours"

Dr Oertel will see from my book that this embryonic appearance of the nerve fibrils is, in fact, of the very greatest significance

Referring again to Prof Beattie, Prof Oertel proceeds, "He has also drawn my attention to an article by C J Hill (*Phil Trans Roy Soc*, London, Series B, 1927, ccxv, 335-387), which shows in some illustrations (notably 27 and 28) of terminal epithelial nerve ramifications between and around cells in a villus of small intestine of a new-born rabbit a resemblance to some of our own tumour preparation"

This also is further confirmatory proof of my thesis that preliminary to tumour growth there is always precedent degradation of the nerve fibrils supplying the involved tissue cells—the injury to the nerves being caused by local anaphylactic reaction over a period of time

Dr Oertel in the concluding remarks of his article says, "Indeed, the conception of 'independence' and 'autonomy' in tumour cells, if these observations are further substantiated, will have to be modified or interpreted accordingly"

As regards this, I contend that the primary cellular conception of cancers and other tumours, which for so many years has un-

fortunately been held inviolable, which has for so long held back the advance of knowledge in these matters and has thus been the cause of a vast amount of unnecessary misery and suffering in vertebrates generally, was finally and irrefutably destroyed when my book was published in 1927

Yours faithfully,

42 Bentley Rd, ANDREW S McNEIL
Liverpool, May 21, 1928

To the Editor:

I have read the letter of Dr Andrew S McNeil of Liverpool, which you were good enough to send me

Anyone acquainted with the questions involved will at once see that his reasoning and assertions are confused, and not at all to the point. In a small book (which I enclose) under the title "The Cancer Mystery Solved" he has advanced no new facts or even scientifically founded theories, but has rather naively conceived and phrased his assumptions as regards the causes and origin of cancer and other tumours. In regard to the rôle of nerves, more particularly, he has simply repeated, in somewhat modified form, an old idea in "loss of trophic nerve control to the parts affected," and he makes much of what he calls "nerve degradation" — ~~the factor on tumour growth~~ ~~the factor in its direct action~~. This factor he includes amongst other postulates (six altogether), which I shall quote to you, in order that you may understand his mentality (page 38): "(1) General tissue poisoning (re-arranging of molecular elements), (2) Local tissue reaction (caused by local irritant), (3) Local anaphylactic reaction (plus a weak general anaphylaxis), (4) Altered trophic nerve control to the part affected, (5) Loss of trophic nerve control to the part affected ("Cancer"), (6) General tissue reaction. (In successfully resisted tumour growth, the successive weak general anaphylactic reactions—just as in asthma of childhood—overcome the general tissue-poisoning or 'sensitization,' and so stop the anaphylactic reactions, local and general. If the tumour is not of the very primitive type, the general body tissues, by general tissue reaction, can now treat the tumour as an ordinary inflammatory swelling, and absorb it)"

Further on, he makes these statements (p 45): "(As tumours are poorly supplied with blood-vessels except in certain cases where tumours originate in vascular tissues, it is very likely that all the nerves to the part—including the vaso-motor nerves—suffer damage by the local anaphylactic reaction, but this aspect we shall not further consider)"

"The cells are not yet completely out of control of the damaged trophic nerves, but are in a state of unstable equilibrium. As the trophic nerve fibres become more primitive in type, through losing their covering, owing to the continued anaphylactic reactions caused by the continuing intermittent local irritation, so do then 'orders' to the cells supplied by them become more primitive. The cells themselves become more primitive, divide more rapidly, and finally, when the uncovered trophic fibrils succumb to the continued local anaphylactic reactions, the pressure of the growing tumour cells, and the juices elaborated by them, the tumour cells are quite out of control, the tumour has become completely 'autonomous' and is now classed as a 'cancer'" (!)

I need not make any comment on these statements. But in any event, the rôle which the author assigns to the loss of nervous control in regard to tumour growth is not a new one, for this is a hypothesis which has been advanced, in different modifications, by various authors since the celebrated experiment made under Schröder van der Kolk, laid down in an inaugural dissertation in 1834, to whom Virechow refers in his work on tumours in 1863, page 61. Amongst later authors, Rindfleisch and Borst have also emphasized the possible relation of lack of proper nerve regulation (a local tissue weakness) as regards tumour development, and the commonly accepted idea of the absence of nerves in tumours has been put forward as a support of these hypotheses.

With all such hypothetical ideas our work has nothing to do! It does not deal with any theory of tumour formation, but it records a definite morphological finding of newly formed nerves in tumours. (Consult in this connection the Editorial in *The Lancet*, March 24, 1928. The importance of such a finding in relation to the present ideas of cancers is there properly stated). Indeed, we are still engaged in further confirming and extending these findings, and it may be added that the very demonstration of newly formed tumour nerves removes much support of ideas which bring "lack of tissue organization" or a "local nerve weakness" or "loss of control," or "nerve degradation" (whatever these indefinite phrases may mean), into direct connection with tumour growth.

While Dr McNeil advances a general hypothetical conception of the origin of cancer, I cannot find that he has in any way carried on investigations on the actual demonstration of tumour nerves, or even furthered our knowledge of tumours. Even less can I see how he can find, as he states, anything in our researches to confirm his views in his thesis that "preliminary to tumour growth

there is always precedent degradation of the nerve fibrils supplying the involved tissue cells—the injury to the nerves being caused by local anaphylactic reaction over a period of time” (Page 5 of Dr McNeil’s letter to you)

The question which concerned us is not, I repeat, one of theory, but of fact—namely, *do tumours actually possess nerves of their own?*

Much more could be said in serious criticism of Dr McNeil’s own writing, and his rejection of the important contributions from others as regards experimental tumour growth, but I think I would only try your patience, and enough has been said to show his inability to grasp the issues about which he quarrels. I have not answered his letter, nor have I taken notice of his book, for the simple reason that I did not consider an answer of any useful purpose. His letter to you only confirms my opinions.

Sincerely yours,

HORST OFTEL,

*Strathcona Professor of Pathology,
McGill University, Montreal*

June 11, 1928

THE PROVINCIAL MEDICAL BOARD OF NOVA SCOTIA

To the Editor

On page 761 of the issue of the *Canadian Medical Association Journal*, June number, appears this item:

“During the last session of the Provincial Legislature, an Act was passed amending the Medical Act. Previously the Board was constituted of nine members appointed during pleasure by the Government, and six members elected by the Medical Society of Nova Scotia for periods of three years. As amended, the Government appointees will hold office for three years, but will be eligible for reappointment, and the Government may remove any members of the Board upon due cause being shown. In April, Drs M. A. MacAulay, E. V. Hogan, Halifax, J. A. Sponagle, Middleton, M. Sullivan, Glace Bay, J. W. McLean, North Sydney, E. E. Bissett, Windsor, F. C. Lavers, New Ross, J. C. Morrison, New Waterford, were removed from membership on the Board by Order in Council, and the following were appointed to the vacancies thus created: Drs O. B. Keddy, Windsor, Hon. W. N. Rehfuess, Bridgewater, W. N. Cochran, Mahone, F. R. Little and John

Rankine, Halifax, B. E. Goodwin, Amherst, Allister Calder, Glace Bay, Hon. B. A. LeBlanc, Arichat

W. H. HATTIE”

One rather significant and peculiar detail, for some reason, seems to have been missed by your correspondent, viz., that Dr J. J. Cameron of Antigonish, one of the older members of the Board appears to have escaped the general slaughter, and still remains a Member of Provincial Medical Board of Nova Scotia, while others, who were appointed at the same time and since, were summarily dismissed, no reason or explanation being vouchsafed. Dr Cameron had long passed the three year period, and the Government, to be consistent, should have cancelled his old commission, as was done in the case of the other eight, and then re-appointed him, if they so desired.

It may be of interest to the profession generally to know just how this thing was done. On or about April 20th of this year notices were sent out to the various members of the Board by the Acting Secretary, to attend a meeting, on May 11th. Three days after notices of dismissal were received by eight members of the Board.

No one, so far as I know, was advised of any change in the Act, nor given an opportunity to tender his resignation. Ordinary courtesy, and the usual amenities of life, one would think, would have suggested to the Government that, with this proposed re-organization (if it ever really materializes), a letter of explanation would have been in order. Evidently, the representatives of our profession on the Provincial Medical Board were regarded, in much the same light as highway employees, registrars of births and deaths, etc., and were entitled to no more courtesy or consideration. The Nova Scotia Government, in their methods of dealing with this matter, have established a record discreditable to themselves and not approved of by right-thinking members of our profession, irrespective of their political affiliations.

Yours truly,

J. A. SPONAGLE

Middleton, N.S., June 15, 1928

N.B.—It will be noticed that the Government appointed two of themselves.

“Too early specialization is one of the great faults of modern American education. The medical school is not the place for the training of specialists.

The specialist who has not had a good basic medical training is a danger to society.”—Dr W. S. Thayer, President, American Medical Association.

Rochet and Peycelon record the rare event of an aneurysm of the splenic artery, of syphilitic origin, which caused death by rupture into the stomach. The aneurysm was so deeply situated as to be undetectable by palpation.—*Lyon Médical*, 1927, vol xxxiii

Topics of Current Interest

STUDIES IN THE RELATION OF HEREDITY TO CANCER*

BY MAUD SLYE

Chicago

Experiments in the nature and behaviour of cancer have been carried on in the cancer laboratory at the University of Chicago during the past eighteen years. All studies have been with spontaneous cancers arising in the natural life of the animals exactly as man's spontaneous cancers arise. The autopsies have now numbered over 65,000, including between 5,000 and 6,000 primary spontaneous cancers. These tumours have included practically every type and location of tumour known in human pathology.

These studies have demonstrated that hereditary predisposition bears a definite relation both to the tendency to be exempt from cancer and the tendency to be susceptible to it. In thousands of mice bred in the laboratory, the tendency to be exempt from cancer was transmitted as a simple dominant trait along mendelian lines.

Results of Cross Breeding—When a cancer-free mouse was mated with a cancerous mouse, none of the first generation offspring had cancer. The tendency to be exempt from cancer thus behaved like a simple mendelian dominant. If, however, two of these first generation hybrids were mated, one-fourth of their offspring were susceptible to cancer, while three-fourths were exempt from it. Thus the tendency to be susceptible to cancer behaved like a simple mendelian recessive.

If instead of mating two first generation hybrids each first generation hybrid was mated with a cancer-free mouse, no cancer appeared in the second generation. In this manner, that is by mating all first generation hybrids with cancer-free mice, all cancer susceptibility has been ruled out of the entire family for many generations. Thus the tendency to exemption from cancer is unquestionably inheritable. Many hundreds of strains and branch strains have been carried in this laboratory, which have never shown a tumour growth of any kind, either malignant or benign. This means that in many families, carried for fifty or more generations and comprising thousands of members, there has been complete exemption

from cancer. Those cancer-free mice, when bred into other families, carry with them exemption from cancer as a dominant character. Compare this with the record of man who pays no attention to heredity in his matings, and where one in eight over a certain age is dying of cancer, and note how tremendously hopeful is this fact of the inheritability of the tendency to be exempt from cancer.

The tendency to be susceptible to cancer is also inheritable, but it is inheritable as a recessive character. This means, that even though there is a great deal of cancer on one side of the family, even to 100 per cent, if there is no cancer in the other side of the family, all the children will be cancer free. If they in their turn mate with cancer resistant individuals, cancer should be eliminated from their immediate families also.

There are apparently two factors necessary for the production of cancer, first, the inherited susceptibility (that is susceptible soil), and second, irritation or chronic stimulation of the type fitted to induce it. In mice susceptible to only one location of cancer, no amount of irritation or stimulation applied to other parts of the body has ever to date produced a cancer. Avoidance of irritation to the locally susceptible tissues has prevented cancer even in susceptible individuals.

Susceptibility to cancer has proved to be local and not systemic. This means that if an individual susceptible to cancer will protect himself against irritation of locally susceptible tissues, he may avoid cancer even though he is susceptible. If every individual knew his heredity, as the heredity of those mice is known, and knew to what type and location of tumour he was susceptible, he might avoid the type of irritation fitted to induce the disease, and thus avoid it, even though he were a member of a 100 per cent cancer family.

The fact of the inheritability of resistance to cancer is one of the few hopeful observations ever made concerning this disease, because it means that, instead of every one being susceptible, large numbers are exempt. This is certainly a most encouraging fact, and it should be allowed to lift the fear of possible cancer from those who are by heredity exempt from it. It also means that it should be possible wholly to eliminate cancer by the appropriate genetic procedure. This does not mean that we can yet relax our vigilance against all forms of chronic irritations in any case, since we have not as yet even begun to apply the facts of heredity to the human species. But it

* Abstract of an address given by Maud Slye, Associate Professor of Pathology, University of Chicago, at the Third Race Betterment Conference, Battle Creek, Michigan, January 26, 1928.

does mean that we should begin to take steps to make such an application, and that in this procedure lies much hope.

Moreover, since there is in man the beginning of a genetic sense, (that is a sense for the fitness of matings) it should be possible to educate this sense. *This is the great hope for humanity.* The way to educate it is to make generally known the facts and operation of heredity, so that man need not be blind as to what characteristics he is transmitting to his children. Thus, it should become possible wholly to eliminate such diseases as cancer.

It therefore, we would uniformly permit examination after death is is the invariable rule in this laboratory the exact facts concerning disease in man could be obtained. If these facts were then kept in permanent record as every fact is kept in permanent record in the laboratory, in two generations by the right matings, just as I have eliminated the disease from hundreds of families in the laboratory, so it may be possible to eliminate cancer from human families.

THE VALUE OF A CREDIT BALANCE IN YOUR VITAL ASSETS ACCOUNT

People have no doubt been very much comforted in the past ten years by frequently hearing the statement made that in the last fifty years, fifteen years have been added to the life of man.

This statement is unfortunately somewhat misleading, inasmuch as it can be demonstrated that this saving occurs for the most part during the first twenty years of our lives, and in fact the greatest saving is during the first year.

Obviously then, what is meant by this statement is not that fifteen years have been added to all of our lives, but that the expectancy of human life has been increased, as the result of the activities in the field of preventive medicine, during the first two decades of life.

The so called wasting diseases of middle-life—that is, cancer, chronic heart disease, chronic Bright's disease, premature hardening of the arteries, apoplexy—have not been influenced by the activities in public health and preventive medicine. This is largely due to the fact that these diseases come on so insidiously that their presence is not suspected until they are far advanced, oft times approaching a fatal termination, unless they are revealed as the result of examinations for life insurance, or, as during the Great War, by medical examining boards.

However, within the past few years there has been a rude awakening. We know now that many cases of heart disease, kidney disease, premature hardening of the arteries

and apoplexy can be traced back to early infections following an acute communicable disease, and later on to syphilis or focal infection from the tonsils, teeth, accessory sinuses in the head, chronic diseases of the appendix, prostate, gall bladder or from the large intestine.

These degenerative diseases of middle life are responsible for over 40 per cent of our total death rate every year, and have not only been uncontrolled but are increasing year by year.—*Health Bulletin*, Toronto, May 5, 1928.

LABORATORY METHODS IN DIAGNOSIS

Although the very proper effort to establish more and more firmly the scientific basis on which the art of medicine rests must inevitably tend to emphasize the academic aspect of medicine it would be disastrous if this were to bring about any slackening of endeavours along the line of clinical observation. In an address on diagnosis (*Brit M J*, 1928, 1, 335), Dr Robert Hutchison suggests that as a result of the increased facilities for laboratory and other investigation which are to some extent intended to apply the findings of academic medicine to practical uses, there is to-day some deterioration in bedside observation as compared with former days. If this indeed be so, it behoves us to be careful, for modern educational demands require an increasing amount of time to be spent in the laboratory, and presumably (unless familiarity is to breed contempt) an increasing attention to laboratory methods.

The question therefore arises, Is there really any reason why laboratory methods, even if multiplied far beyond those in use to-day, should divert attention from the clinical study of disease? The answer is certainly in the negative, if only the nature of the information these laboratory methods afford is clearly recognized. On this point, however, there appears to be a good deal of misapprehension, and even Dr Hutchison seems perilously near error when he speaks of "laboratory tests and other short cuts to diagnosis" (italics ours), though his whole argument makes it abundantly clear that for him, at least, there can be no such short cuts. Laboratory workers, like other specialists, are apt to be over-enthusiastic about their own branch of work, and to attach undue weight to the information they are able to give, but no laboratory method yet devised can provide a short cut anywhere, on the contrary, it can only put another fact at the clinician's disposal, and so increase the number of data, whose value it is his business to assess in coming to a considered opinion. But laboratory methods do provide facts, and it is here that the clinician is sometimes at fault, for if the laboratory finding is not in harmony with his clinical conception of

the case he is apt, especially in his teaching, to draw distinctions between "clinical observation" and "laboratory methods" which are by no means flattering to the latter. This is all wrong, there is no real distinction between the two types of observation.

The fact that a patient has an eosinophilia, a raised blood urea, or a positive Wassermann reaction, is merely a clinical observation which it happens to be more convenient to make in the laboratory, but if we were to take the necessary apparatus to the bedside, such investigations would in no essential way differ from those made, say, with a stethoscope or a thermometer, and the information they give is much of the same order. Viewed in this light laboratory methods merely give additional clinical facts. Occasionally it may be a fact which dominates all others, but far more often it is one which, fitting into its place with others in the mosaic, helps to complete the diagnostic picture. Sometimes, indeed, the fact is one for which no place can be found, but this should not be made a ground of complaint against laboratory methods, it is merely evidence of our present ignorance. In the early days of the Widal reaction it was

sometimes a complaint that the reaction was negative in a clinically clear case of typhoid fever, but the subsequent recognition of the paratyphoid organisms proved the accuracy of the laboratory work, and doubtless much that seems contradictory to-day will be made plain by the knowledge of the future.

It is, however, not to be denied that danger lurks in too great emphasis upon the importance of the laboratory, and it would be an interesting experiment if, during some part of their career, students could be prevented from access to all reports from special departments, and were made to rely entirely on their own investigations. For some minds there is a curious attraction about facts elicited from a test tube or by the microscope, as being more scientific than those observed by the unaided senses, and this is a prolific source of error. The sensible plan seems to be to collect all the facts that are within our reach by whatever means they are obtained, and then, taking Dr. Hutchison's wise words to heart, pray that we may be granted the supreme diagnostic gift—a right judgment in all things.—*Brit M J*, 1928, 1, 361 (Editorial)

Abstracts from Current Literature

MEDICINE

The Value of the Electrocardiogram in Acute Rheumatic Fever Reid, W. D., and Kenway, F. L., *New Eng J Med*, Mar 15, 1928, cxcviii, 4

As is the case with other chronic progressive diseases, it is highly important to detect the earliest signs of involvement of the heart in acute rheumatic fever. Increased attention is being paid to the condition of the myocardium from the earliest stage of this disease, and the electrocardiograph is being employed to help in the detection of derangements of the heart muscle.

A series of 26 cases of rheumatic fever in the Boston City Hospital have been studied from this point of view, three types of changes being especially looked for, namely (1) increase in the auriculo-ventricular conduction time, (2) alteration in the ventricular complex, (3) various irregularities in rhythm. Repeated electrocardiograms on the same patient were taken in order to detect the changes, since these are often transient.

The findings of these authors indicate that the heart muscle is affected in a large proportion of cases. There was an increase of

auriculo-ventricular conduction time in 92 per cent, in 42 per cent of which it took the form of partial heart block. Change in the ventricular complex was detected in 80 per cent, and extra-systoles in 34 per cent. These findings correspond with the reports of other observers.

It is important to note that evidence of myocardial development is found even when the arthritis has completely disappeared and the heart appears normal on physical examination, not only that, but the electrocardiogram may be the first and only evidence of cardiac involvement. There seemed to be no relation between the duration of the joint symptoms and the degree or persistence of the electrocardiographic changes.

This high incidence of changes in the electrocardiographic examinations confirms the opinion which is now widely held that the heart is involved in all cases of rheumatic fever, even if there are no clinical signs of the involvement. It also is in accord with the conception that whilst the arthritic changes are exudative and may be checked with salicylate medication, those in the heart are proliferative and may progress in spite of what appears to be improvement clinically.

H. E. MACDERMOT

Some Points in the Early Diagnosis of Diseases of the Central Nervous System in General Practice Adams, D K, *Glasg Med J*, May, 1928, etc

Many practitioners of wide experience might be inclined to say that organic nervous disease is hopeless, a point of view which depends mainly on the fact that exact diagnosis is so difficult in this type of disease. In no other branch of medicine do so many similar pictures or disease arise from different causes, or a single etiological factor give rise to such dissimilar clinical conditions. A broad survey shows however that most organic nervous diseases fall into one or other of three main groups, neuro-syphilis, disseminated sclerosis, and epidemic encephalitis. Cerebral tumours are comparatively much fewer than any of these, but still form a fourth important group.

The most important point in dealing with these is their early detection, and yet Dr Adams holds that rarely if ever are they diagnosed in their earliest stages. In the case of neuro-syphilis text-book descriptions rarely conform to what is seen in practice, and certainly not to what is taking place in the very early stages. If the diagnosis depends only on finding Argyll-Robertson pupils, abolished knee-jerks, and Kernig's sign, it is not to be expected that treatment can be of much avail, in spite of therapeutic agents of such power and specificity as salvarsan.

Among early symptoms transient diplopia is of first importance. Dr Adams in a large series of cases has only twice found this to be without an organic basis, and in both these cases there was a high degree of astigmatism. Inequality of pupils, irregularity in outline, impairment of consensual reflex to light, slowing and fatigue of the light reflex, are all changes that may precede a fully developed Argyll-Robertson pupil. Ptosis or gradual development of a squint are highly suggestive.

Derangement of bladder function is another early symptom. It may take the form of frequency, precipitancy, hesitancy, or retention. Crises also are frequently early in appearing. Reference is made to the frequent mistaking of these for acute abdominal conditions. Such patients often present no other signs of tabes. Other forms of crisis, such as the laryngeal, must also be borne in mind. Dr Adams cites the case of a young man in whom a tracheotomy was performed for symptoms of urgent asphyxia, which were later shown to be a laryngeal manifestation of neuro-syphilis. In this case the pupils were normal and the knee-jerks brisk, but close questioning brought out a history of previous double vision, frequency and precipitancy of micturition, and girdle pains.

Disseminated sclerosis is the next commonest organic nervous disease in Europe. With all its many resemblances to neuro-syphilis it almost certainly has no etiological relationship with it, although there is evidence to suggest that it is due to a non-syphilitic spirochete. In this disease also it is quite evident that when the clinical signs have become as definite as given in the text-book, paraplegia, intention tremor, nystagmus and slurring speech, the damage to the brain and cord must be extensive and irreparable. Of the early symptoms transient diplopia, especially in a young healthy adult, is of very grave significance. Temporary loss of sight is another important sign. It is due to a retro-bulbar neuritis and may improve in a few weeks, hence the likelihood of its being passed over as "idiopathic."

One of the most constant early signs is loss of abdominal reflexes. Derangement of bladder function is as common as in neuro-syphilis and as in that disease is an important early symptom.

The treatment need not be regarded with the hopelessness which it commonly arouses, if the disease be recognized early. Even after allowing for the spontaneous remissions which characterize its course, much may be done with artificially produced pyrexia, mercury and salvarsan.

As regards epidemic encephalitis Dr Adams has a less optimistic view. It is noteworthy that with each epidemic recurrence it has shown fresh manifestations which tends to make the diagnosis extremely difficult at times. It may be confused in its severe forms, with tuberculous meningitis, or cerebral tumour. The Wassermann reaction should serve to separate it from cerebral syphilis. Only too often it is only by the subsequent development of Parkinsonism that encephalitis is finally recognized. So far no really hopeful treatment has been evolved. The suggestion that a dietetic factor is partly responsible is worthy of investigation.

The conclusion is that in nervous diseases early recognition is essential for successful treatment, and such recognition can be achieved only in general practice. It is with the general practitioner that the hope of real advance lies, as it does in most fields of general medicine.

H E MACDERMOT

An aid to the Early Diagnosis of Measles and Possibly Various Other Eruptive Diseases Wadsworth, W M, and Misenheimer, E A, *J Am M Ass*, May 5, 1928, etc, 18

The authors noticed, while using ultraviolet radiation for a child who had just recovered from measles, with disappearance of the eruption five days before, that exposure to ultraviolet rays in a darkened room made visible what seemed to be a generalized eruption on

the trunk, face and limbs. They then made observations on the effect of exposure to these rays in cases of measles in the pre-eruptive stage, and in the first case observed they found that the eruption showed beneath the epidermis exactly 48 hours before it became visible microscopically. A total of 14 cases were observed under these conditions, and it was found that the rash appeared at times varying from 33 to 76 hours after it became visible under the ultraviolet rays. The 76-hour case was a child of two years whose condition was followed from the beginning of the fever. It was found that the rash is present somewhat earlier in blondes than in brunettes, also that it becomes visible sooner in babies than in older children. The average seemed to be about fifty hours.

This method was tried in one case of scarlet fever and the rash showed plainly 11 hours before becoming visible to the naked eye.

The authors feel that this way of determining the presence of a rash before it becomes apparent should be of considerable value in settling the diagnosis in the earliest possible stages. They refer to two cases in which the patients had been exposed to measles and had high fever, but in whom the ultraviolet ray failed to show any rash, thereby reversing an original diagnosis of measles.

They suggest that this may be a useful aid in determining the time at which it is safe to discharge a case of measles, as the rash is plainly visible on exposure to the rays for a number of days after its apparent disappearance. Eruptions in other diseases also, such as variola, syphilis, typhoid fever, would probably be detected and confirmed by this means.

II E MACDERMOT

A Case of Erythredema or "Pink Disease"

Cunnie, D L, *Brit M J*, 1928, 1, 48

This disease is sometimes called erythredema polyneuritis, and seems to be quite rare. The author's case was in a boy aged two years and eight months. The disease began with malaise and occasional vomiting about two weeks before the more serious manifestations. Then the child developed intestinal colic, with slight elevation of the temperature. The bowels were constipated. Three days later photophobia and conjunctival injection were noted, and the child was completely hypotonic. The tips of his fingers and toes were now slightly reddened, swollen, and painful to the touch. The next day he became semi-comatose, and his fingers, toes, and the greater part of his hands and feet were bright red, swollen, and acutely tender. Wasting was rapid. Three days later, improvement was noted, his temperature began to fall, the red oedema was less marked. Then, the affected skin began to peel, complete casts of some of his fingers being shed in one piece. As he convalesced he was

noted to be quite weak, his legs were wasted and flabby, and the knee-jerks were absent. It is suggested that "pink oedema" is a polyneuritis due to an intestinal toxæmia.

A G NICHOLLS

Fatal Poisoning by Borax

Buch, John, *Brit M J*, 1928, 1, 177

The case recorded by Mr. Buch has so many points of similarity with that described by Mr. Donald Cunnie under the name "erythredema" or "pink disease," noticed above, that it raises the important point whether poisoning by borax or boric acid may not account for the latter rare affection.

A child, two weeks old, was found to be unconscious, extremely emaciated, and with the eyelids closed. All four extremities were markedly flexed at all joints. The respirations were irregular, the heart-beats were normal. The temperature was subnormal. The fingernails and terminal phalanges of the left hand were coloured a bright red, as if painted, the forefinger was red and swollen as far as the wrist, in marked contrast to the fingers of the right hand. The coloured fingers were tender. A red ring surrounded the anus, the entire scrotum and the lips had the same abnormal colouring. A spot of red was visible at the external extremity of the right upper eyelid. The feet were normal. The bowel washings had the "cooked spinach" appearance described as occurring in Mr. Cunnie's case.

During the previous five or six days the infant had consumed about one and a half drachms of borax and boric acid, in the form of honey and borax and glycerin of borax, administered to prevent thrush on the advice of a nurse. The child died three days later, when seventeen days old. There was post-mortem staining of the same colour. The muscles and arterial blood were pink. Not much else was found. The stomach contained about one ounce of a thin, yellow, opaque substance resembling honey. The liver and kidneys were dark, the latter being congested with spots of hæmorrhage under the capsule.

The author suggests that many cases of obscure illness in infants may be due to the administration of borax. A dummy teat, dipped in glycerine of borax may carry 1½ to 2 grains of borax, all of which is swallowed.

A. G. NICHOLLS

Thoughts on the Morbid Processes Active in Pernicious Anæmia

Kumbhaari, E B, *Am J Med Sc*, April, 1928

The disease is more than a matter of cell destruction, the increase in hyperplastic hæmopoietic tissue is much greater than the increase in blood destruction. It would seem that a more fundamental defect of the hæmolytotoxic system may be the inability to form

efficient erythrocytes. Why are these cells unfit? It seems that some substance in the liver interrupts the pernicious process in the bone marrow and allows it to settle down to a normal activity.

There is a question as to whether the active liver substance is a vitamin, hormone, detoxicant or still some other kind of agent or whether it merely replaces something absent or deficient in the pernicious anemia liver. Whipple has advocated the view that pernicious anemia is a deficiency disease due to a deficiency in materials that build the stroma of the erythrocyte. That the spleen is also concerned is indicated by the prompt improvement that usually follows splenectomy. In addition to the hemolytic function it may have an influence in preventing the liver from exerting a maturing effect on the erythroblasts.

Achlorhydria is probably a constant but preceding and otherwise unrelated accompaniment of the disease. The chief types of causative agents that have been advanced are some unknown intestinal ptomain, a chronic cholecystitis, a hypersplenism, a disturbance of lipid metabolism with an accumulation of hemolytic unsaturated fatty acid. It is safe to say that none has ever approached proof just as one can say that the real disease has never been produced experimentally.

From the evidence at hand and *a priori* reasoning, one leans toward an intestinal noxa somehow associated with achlorhydria and absorbed by the portal system. This hypothetical noxa may in turn in its passage through the spleen stimulate it to excessive hemolysis, as well as damage its normal relation to the hemopoietic function of the bone marrow. Arriving in the liver, it may upset that organ's hypothetical relation to hemopoiesis (perhaps hindering it in furnishing a necessary ingredient) with the result that inefficient erythrocytes are prematurely ejected into the blood stream or their maturation delayed and disturbed, so that in spite of the marrow hyperplasia an insufficient number of inefficient erythrocytes are turned out, to be destroyed in excessive numbers, as is well recognized in the pathological anatomy and physiology of the disease.

LILLIAN A. CHASE

The Ten Year Diabetic What He Is What He Should Be How to Make Him So Joslin, E P, *Am J Med Sc*

At present the ten-year diabetic is one whose disease began when he was between 15 and 68. Most frequently his disease has begun in the fifth decade. Frequency 22 per cent of the total cases have lived 10 years. There is good reason to predict that every diabetic will be a ten year diabetic soon. We have had insulin only five years.

Tenth diabetic anniversaries. The celebration of the tenth diabetic anniversary is cheering to the patient as well as to the doctor. It promotes morale. Last year the mortality of the 1,205 cases seen and traced was 35 per cent but for the 235 children it was 13 per cent.

Causes of death. Approximately half the deaths in last year's series of 42 deaths were from cardiovascular and renal conditions. Save for cancer 0.47 per cent, the other causes of death were scattering and had little connection with diabetes. Only one case in 42 died of tuberculosis. Arteriosclerosis has replaced coma as a cause of death. Studied by Roentgen ray it is found in every necropsy upon a diabetic, young or old, of five years' duration.

The average age of diabetics at death. The average age of diabetics at death has increased from 44 $\frac{4}{5}$ years in the Naunyn period to 60 $\frac{9}{10}$ years in the last twelve months.

Diabetes is milder the longer it lasts. Formerly diabetics were expected to get worse, now they get better. As the duration of diabetes lengthens, its symptoms should lessen and fade away.

What he should be. If over thirty-five he should be of normal weight and the finest product of the periodic health examination. How to make him so. By the early diagnosis of diabetes. To discover diabetes early seek for it in the obese between 45 and 55.

The prevention of arteriosclerosis. Never overfeed a diabetic, least of all with fat. Protein should be moderate, more than 1 gm per kgm of body weight in the young and less than 1 gm in the old. Hyperglycemia does not seem to be a cause of arteriosclerosis. Until it is proved that cholesterol in the blood of diabetics is low, it is wise to give few rather than many eggs. Apart from eggs, the quantity of cholesterol in food is comparatively low. Cholesterol is essential and is to be found in practically every cell of the body. Do we manufacture it or eat it only ready made? Can we destroy it or merely excrete it and can we hasten its excretion when it is present in excess? All these questions should be investigated soon.

LILLIAN A. CHASE

Diphtheria Prophylaxis Among Asthmatic Patients Waldbott, G L, *J Am M Ass*, Jan 28, 1928, xc, 4

The potential dangers attending the injections of horse serum in the case of asthmatic patients are too well known to call for any re-statement. It might therefore be expected that the employment of diphtheria toxin-antitoxin amongst those with asthmatic histories would be frequently attended with dangerous consequences, but in practice this seldom appears to be the case. A great many asthmatics have been given toxin-antitoxin injections without

showing any untoward symptoms, even when they show specific reactions to horse serum

There is therefore a considerable discrepancy between the theoretical aspect of the causation of asthma and actual experience in the use of these injections containing protein, but, whatever the explanation may be, it cannot be said that no danger exists. Cases, few though they may be, have been reported in which alarming and even fatal results have followed the injection of toxin-antitoxin in the presence of a sensitivity to horse serum, and now Dr. Waldbott draws attention to a series of cases of severe asthma, whose symptoms were definitely brought on again, and in a much aggravated form, by the injection of toxin-antitoxin serum for the prophylaxis of diphtheria.

He makes two suggestions as to avoiding this danger. One is that in this type of patient the serum should be detoxicated as in Ramon's anatoxin, or Larsen's ricinoleate preparation, thus obviating the use of horse serum. But even in these preparations there are proteins of various kinds, and they may be capable of precipitating asthmatic attacks in those who are susceptible. It is therefore suggested in addition that small desensitizing doses of serum should be given to these patients before the whole injection is given, and this is probably the safest course to pursue in every case.

H. E. MACDERMOT

Le Groupe Sanguin II de l'Homme Chez le Chimpanzé Human Blood (Group II) and the Chimpanzee *Ann de l'Institut Pasteur*, 1928, xlii, 363

This author, in a most interesting and suggestive article, has investigated the blood group reactions in man and the chimpanzee. He begins with a short resumé of the work done on precipitins, agglutinins and hæmolysins in the past, comments on the confusion to the literature in regard to the nomenclature of the various blood groups, to remedy which he suggests that an international conference should take up the matter. He then defines his own nomenclature, and gives a valuable statement in regard to the percentages of the different blood groups in many races of mankind. He points out that the laws of Mendel apply to the different blood groups, and, following von Dungern and Hirschfeld, Ottenberg, Dyeke and Pluss, considers the cellular agglutininogen to be the dominant character.

The following are the author's findings —

1 The red corpuscles of the chimpanzee (14 animals tested) are agglutinated by human sera III (B) and IV (O), human sera (AB) I and II (A) are without action on these corpuscles.

2 The serum of the chimpanzee agglutinates human red cells I (AB) and III (B). It has no action on human cells II (A) and IV (O).

3 The blood of chimpanzees, then, presents the blood characters (agglutimogen A and agglutinin B) of group II in man.

4 Man, of group II, can receive with impunity intravenously the citrated blood of the chimpanzee.

5 This identity of cells and sera in the case of the chimpanzee and man of group II tends to support the hypothesis of the common ancestry of chimpanzee and man.

A. G. NICHOLLS

Neue Versuche über Immunisierung mit Abgetoteter Pockenvakzine (A New Method of Immunization with Devitalized Small-pox Vaccine) Knopfmacher, W., and Stohr, D., *Monatschr f Kinderhilk*, 1928, xxxvii, 4

These observers have found that by repeated injections of small amounts of cow-pox vaccine heated to 56° C, so as to devitalize and attenuate it, it is possible in many cases to produce immunity against cow-pox. In young infants three injections of one gram of such an avirulent vaccine produce a certain protection against subsequent skin inoculations with the regulation vaccine.

The glycerinated lymph is diluted with physiological salt solution in the proportion of 1-2 or 1-5, and injected, preferably at intervals of five days. This method is recommended in the case of children exposed to the danger of contracting small-pox, who are not, for any reason, suitable subjects for the ordinary small-pox vaccination.

A. G. NICHOLLS

SURGERY

The Present-Day Status of Operative Treatment of Ulcer of the Stomach and Duodenum Haberer, H., *Deutsche Zeitschrift für Chirurgie*, 1927, cc, 212

Surgeons to-day are by no means agreed upon the proper operative treatment of gastric and duodenal ulcer. Broadly speaking, there are two schools of thought upon this subject, one conservative, the other radical. Followers of the conservative school recommend palliative operations and short-circuitings. Supporters of the radical line of thought insist upon complete removal of the primary lesion together with a considerable portion of the stomach itself, and re-establishment of gastro-intestinal continuity by one of several methods.

From a study of 2,100 cases operated upon by himself Prof. Haberer places himself unreservedly in the group of "radical" surgeons. He has performed resection 1,698 times for ulcer of the stomach or duodenum. He summarizes his views and reviews the advances of the past decade as follows:

There are to-day no generally-accepted rules for the selection of the most suitable operative

procedures in the surgical treatment of ulcer but guiding principles can be laid down along general lines. At the present time radical surgery seems to offer more promise of a successful result than conservative methods. Resection, however, cannot be designated as the operation of choice in the hands of all surgeons, on account of the difficulties of the procedure. The less experienced and less skilful workers will show better results with gastroenterostomy than if resection be attempted, especially when the local conditions present great difficulties. Even the most radical exponents of resection cannot dispense with gastroenterostomy as the proper procedure in inoperable ulcer, whether the inoperability depends upon the extent of the disease or the condition of the patient.

Of the indirect or palliative methods, gastroenterostomy always gives the least number of post-operative jejunal ulcers. Pyloric occlusion in any form is to be abandoned, as it accomplishes no more than simple gastroenterostomy, and has a much higher percentage of subsequent jejunal ulcers. Further studies are required to determine whether simple jejunostomy shall be given a definite place as a method of ulcer treatment. There are two weak points in all palliative operations. First, they do not with certainty lead to the healing of the ulcer, and thus do not protect the patient from the complications of ulcer (bleeding, perforation, cancer). Second, it is not always possible at operation to distinguish between cancer and ulcer. Mistakes are possible in at least 5 per cent of cases.

Of the radical methods the sleeve resection has been discarded by many surgeons on account of the few satisfactory permanent results obtained and the danger of the recurrence of the ulcer. It cannot be employed as the method of choice in ulcer of the stomach. Billroth's resections with removal of the pylorus give good results if the whole acid liberating mechanism is removed. Radical resection can thus be avoided. In resection the most important fact to keep in mind is the frequency of multiple ulcers. Many so called recurrent ulcers following resection will not stand critical examination, but must be considered as true ulcers overlooked by the operator through ignorance or incomplete technique. It cannot be denied, however, that true recurrences can take place.

A definite number of jejunal ulcers have occurred following Billroth II. Their number can be reduced by faultless technique, but can not be entirely abolished, because the method does not re-establish the normal physiological relations of the parts. Pyloric glands scattered in the first part of the duodenum may explain some of the jejunal ulcers after Billroth II. The resection according to Billroth I has the

advantage over Billroth II that it retains the normal physiological relations. Apparently it is not followed by jejunal ulcer. It is, however, much harder to carry out than Billroth II, and the number of cases in which it can be used is much smaller. Of late the method has been extended by the introduction of termino-lateral anastomosis between the cut end of the stomach and the mobilized descending portion of the duodenum (Haber's operation).

The only proper treatment of jejunal ulcer is its radical resection. Billroth I has here the same advantages as Billroth II. In carcinomatous degeneration the operation must naturally be carried out as early as possible.

Chronic recurring bleeding from ulcer demands operation before anæmia brings an irreparable damage to parenchymatous organs. Acute hæmorrhage demands immediate operation, if a previous diagnosis of ulcer has been made and its situation is known. There may be multiple ulcers, and bleeding may recur after one lesion has been dealt with at operation. In acute hæmorrhage in a patient in whom an accurate diagnosis has not been made operation may fail to reveal an ulcer, and the patient will only be harmed by the procedure. In such cases conservative treatment is indicated. Blood transfusion is of greatest service. Operation is demanded in acute perforation. The general condition of the patient and the ability of the surgeon will decide whether conservative or radical treatment shall be carried out. In properly selected cases resection in the hands of experienced rapid operators gives the best results. Primary closure of the abdomen is desirable. In gradual perforation expectant treatment is indicated. When the symptoms have subsided one can operate with greater safety than in the early period when abscesses are often encountered, and radical operation prevented.

R. R. FITZGERALD

Surgery of the Large Intestine Pool, E. H., and McGowan, F. J., *Am. J. Surg.*, March, 1928, iv, 245.

Most of the lesions of the large intestine, not including the rectum, are situated in the cæcum and must be considered as possibilities in the study of the average chronic case. The authors discuss in this paper tuberculosis, actinomycosis, carcinoma, intussusception, mesenteric obstruction, Hirschsprung's disease, diverticulitis, colitis, amœbic dysentery and polyposis.

Tuberculosis—Localized tuberculosis of the colon is more frequent than is usually supposed, often goes unrecognized, and has as its most frequent sites the cæcum and ascending colon. The most significant type is the hyperplastic, resulting in marked thickening of the wall and relatively little ulceration. The

symptoms suggest chronic intestinal obstruction, slowly developing constipation, with periods of diarrhoea. On examination with a barium enema the characteristic filling defect of hypertrophic tuberculosis is a complete absence of barium at the site of the lesion, differing in that respect from carcinoma. Other lesions than carcinoma are difficult to differentiate, even at operation, such as inflammatory conditions about the appendix, or actinomycosis.

When stenosis has developed operative relief is indicated and when the lesion cannot be differentiated from carcinoma the treatment should be the same as for cancer. In general, however, the treatment should be conservative, for intestinal tuberculosis can heal completely when treated by heliotherapy, which must be continued intensively under expert direction for many months.

Actinomycosis—This fungus selects the ileo-cæcal region as the usual site and results in a slow chronic inflammatory reaction, causing marked thickening of the intestinal wall, later involving adjacent structures, including the abdominal wall and retroperitoneal tissues. When the sinuses develop through the abdominal wall the fungus may be recognized in the scant pus. In the early stages the lesion may be mistaken for carcinoma, hyperplastic tuberculosis, or chronic inflammation dependent on the appendix, and the true nature cannot be recognized at operation. Therefore, resection is the appropriate procedure, but later, when fistulae and infiltration have occurred, radical operation is useless.

Carcinoma—The colon is a frequent and relatively favourable site of cancer, favourable, because it is limited in extent, slow in growth and late in metastasizing, the secondaries for a long time being confined to the regional lymph-nodes. Various histological types of cancer occur, and the advantage of slow growth is often sacrificed by late recognition. Frequently, the palpation of a mass, or the onset of intestinal obstruction, are the first symptoms. Suggestive symptoms are blood in the stools, abdominal discomfort, and bowel derangement. Any or all of these symptoms should lead to a persistent investigation to seek their cause. Pain or discomfort of a colicky nature may be the first complaint. The sigmoid is the most frequent site, then the cæcum then the ascending colon. If involving the right half of the colon, diarrhoea usually occurs for a time, whereas constipation is usually associated with involvement of the left colon.

The authors emphasize two general details of diagnosis: first, the importance of a routine rectal and sigmoidoscopic examination, second, the danger of administering barium by the

mouth in cases of suspected obstruction, thereby converting a chronic into an acute obstruction.

With regard to treatment before obstruction resection is the rule. In the right half of the colon this should be in one stage, but in the left half a two-stage operation is infinitely safer. In acute obstruction palliative procedures should always be elected, *i.e.*, drainage above the obstruction. The diseased bowel is not favourable for an anastomosis and the toxæmia of obstruction renders the patient intolerant of prolonged operation.

Important features in the surgery of carcinoma of the colon are early operation, early recognition of obstruction, and relief of retention.

Intussusception—This should be diagnosed if a child, between six and twelve months old, has sudden, severe, colicky and intermittent abdominal pain with vomiting. The vomiting occurs early. Blood and mucus are passed *per rectum* after the bowel contents have been evacuated. Abdominal palpation shows a sausage-shaped tumour, not always in the right ileo fossa, which may be palpable *per rectum*. Early operation is essential.

Mesenteric Obstruction—Mesenteric obstruction is due either to embolus or thrombosis of a mesenteric vein. Diarrhoea with blood in the stools and indefinite abdominal symptoms often precede the more serious symptoms of obstruction. If operation is performed early, results are usually satisfactory, later, the condition is usually fatal.

Hirschsprung's Disease—Two-thirds of the cases involve all of the colon, in the others the dilatation is confined to the pelvic colon. The symptoms are marked constipation from infancy and abdominal distension, with a characteristic picture given by the x-ray. Treatment is migration of the bowel followed, if not satisfactory, by cæcostomy or resection.

Diverticulitis—The sigmoid is by far the most frequent site and, as a rule, the diverticula do not give rise to symptoms until the onset of an inflammatory reaction. This inflammatory reaction simulates that of inflammation of the appendix and, on account of the slowness of the inflammatory progress, abscess with walling-off is the rule. Chronic symptoms occasionally occur, giving rise to repeated attacks of discomfort in the lower left quadrant, with frequent and inadequate stools. Diagnosis is confirmed by the x-ray examination.

The significant features of diverticulitis are that it is a disease of adult life, with left-sided symptoms similar to acute or subacute appendicitis, and the inflammatory process goes on to abscess-formation. The treatment, when the symptoms are acute, is operation, when abscess is formed, drainage being instituted and nothing else.

Colitis—Colitis presents the symptoms of pain, diarrhoea with blood in the stools, tenderness along the site of the colon and sometimes fever. The course is protracted, and in severe cases anaemia is marked, resulting in the patient becoming extremely weak and prostrated. Amoebic and tuberculous ulcerations must be excluded in the diagnosis. Treatment on the basis of recent studies includes, besides local measures, correction of distant foci of infection and the use of vaccines. If surgery is resorted to a caecostomy is indicated.

Amoebic Dysentery—This disease may involve the whole large intestine, but the caecum is the favourite site. The ulcers are characteristic, with a small opening on the mucous membrane leading to a cavity in the submucous coat, hence the term "flask shaped." The symptoms resemble those of colitis, but the diagnosis in this condition depends entirely on the finding of amoebae in the stools. The results with emetin are excellent.

Polypoid—The structure of polypoid tumours is that of an adenomatous hyperplasia of the intestinal mucous membrane, resulting in haemorrhage, and diarrhoea, with a marked tendency to malignant change. Palliative treatment is unreliable, resection is rarely successful, on account of the extensive and low distribution of the lesions.

R. V. B. SMITH

The Precancerous Changes in the Rectum and Colon. Lockhart-Mummery, J. P., and Dukes, C., *Surg., Gynec. & Obst.*, May, 1928

One of the greatest difficulties in studying the etiology of cancer is that the disease is seldom seen in the early stages of development. Thus the changes in the normal epithelium which result in malignant tissue are still but little understood.

In the vast majority of cases of rectal cancer there is nothing in the patient's history which points to any previous condition acting as a forerunner. There does not appear to be any relationship between hemorrhoids, internal or external, and carcinoma. Pruritus does not act as a forerunner, as it does in the epithelioma of the vulva, but chronic fistula does occasionally appear to act as an exciting cause. Chronic constipation appears to be without importance, and it must be admitted that, apart from adenoma, we know of no condition in the rectum which predisposes to cancer with any frequency.

It is evident that the etiology of malignancy cannot be elucidated by the histological study of tumours, and that one must go farther back and examine changes in the epithelial cells before malignancy is reached. This is a difficult procedure, because it is hard to obtain suitable material, but, just as Sir Lenthal Cheate has recorded the relationship of chronic hyperplastic

changes and malignancy in the breast, the authors are able to provide pathological and clinical evidence of similar changes which precede cancer of the rectum.

Multiple adenoma presents the best clinical example of the simple adenoma which undergoes malignant change and develops into typical carcinoma. The histological examination of large simple adenomata not infrequently reveals commencing malignancy.

If the portion of bowel removed at operation for excision of cancer is immediately examined after fixation, with a low power microscope, there will often be seen irregularities in the contour of the mucosa, not visible to the naked eye. These irregularities occur in multiple adenomatosis and early carcinoma and are seen to be due to a localized epithelial hyperplasia, which may be invisible to the naked eye and only detected by microscopic examination, or, on the other hand, may be large enough to be noticed as tiny, smooth, rounded elevations. These areas of hyperplasia represent the first stage of tumour formation, and in this connection there are three points of importance: (1) their frequent association with multiple adenomatosis and carcinoma, (2) their more frequent presence in the neighbourhood of a small malignant tumour than a large malignant ulcer, and (3) that they affect an area of bowel, several inches above and below the carcinoma. No sharp line of distinction can be drawn between this hyperplasia and adenoma. In practice the authors reserve the term adenoma for a glandular tumour visible to the naked eye and class as hyperplasia those areas only visible on magnification.

The sequence of events in the development of cancer may be divided into four stages: (1) localized patches of hyperplasia, (2) the appearance of a crop of sessile adenomata, (3) carcinomatous development, either in one of these pre-existing adenomata or in the neighbouring epithelium, and (4) the progressive enlargement and dissemination of the malignant tumour.

The precancerous state in the rectum is distinguished by irregular patches of hyperplasia and adenomatosis. Not every area of hyperplasia evolves into an adenoma, or the adenoma into cancer, for the hyperplasia may disappear and the adenoma may become pedunculated and be shed, or the onward march may otherwise be arrested. The authors cite several cases in confirmation of their findings. The truth seems to be that adenomata, once removed, do not occur in the same spot, but other adenomata tend to develop in the neighbouring mucous membrane. These arise as the result of the occurrence of progressive hyperplastic change over a fairly extensive area of the bowel epithelium.

It is very important that repeated sigmoido-

scopic examinations should be made in patients who have had adenomata removed, to determine the presence or absence of a fresh development of tumour

R V B SHIER

PATHOLOGY

Syphilitic Lesions as met with at Post-Mortem Examinations Cleland, J B, *Med J Australia*, 1928, xiii, 399

This paper gives the frequency of various syphilitic lesions as discovered in 1,600 autopsies conducted at the Adelaide Hospital from the beginning of 1920 to the end of 1927, and in 145 autopsies at the Mental Hospital

It was found that rather more than 4 per cent of the bodies of patients examined at the Adelaide Hospital showed syphilitic lesions. At the Mental Hospital less than 10 per cent manifested syphilitic infection

Among the cases at the Adelaide Hospital syphilitic aortitis was by far the commonest lesion. In about half of the cases in which this occurred an aneurysm had resulted. In a considerable number of the remainder the disease affected also the aortic valve. In four cases it was thought that fibrosis in the lungs might have been contributed to by a syphilitic infection. There were three possible gummata of the lung, and one possible syphilitic pneumonia

A. G. NICHOLLS

Obituaries

Dr Hamilton Allen, a graduate of McGill University (Med '72) died in March at San Diego, Cal., where he had resided for some years. He was a native of the vicinity of Kemptville, Ont., and attended the high school of that place before proceeding to McGill. Burial was made at Tacoma, Wash.

Dr James Rorison McLean, who died in Toronto on April 1st at the age of 57 years, was one of the best known medical practitioners in Northern Ontario and practised for many years in Sault Ste Marie, where he was resident physician of the Algoma Steel Corporation. He was born in Arnprior, Ont., a son of the late Rev James McLean, and after having attended the public and high schools in that town, proceeded to Queen's University, Kingston, where he completed the course in Arts. After graduation from McGill in Medicine, he spent a year as house surgeon on the staffs of the Royal Victoria and Western Hospitals in Montreal and, in 1900, established himself in practice in Sault Ste Marie. Late in 1915, Dr McLean enlisted in the C A M C and became attached to the 119th Overseas Battalion as medical officer. When that unit was broken up, he went to France as a member of the staff of No 2 Canadian Stationary Hospital and other institutions, and after the armistice was attached to the Ontario Military Hospital at Orpington. In 1919 he returned to Sault Ste Marie and resumed practice. Dr McLean was stricken with a hæmorrhage of the brain while at work in the Plummer Memorial Hospital at Sault Ste Marie and died a week later. In 1922 he was married to Miss May McCauley, of Sault Ste Marie, and, in addition to his wife, is survived by three daughters and one son.

Dr H. A. Bonner. A remarkable old character died in the person of Dr Hector A. Bonner in Toronto on June 8th. Born in King, 1850, seventy eight years ago, Dr Bonner graduated at old Trinity in 1877, and practised in the village of Chesley up to 1896. At this time the wandering spirit seems to have broken loose, and he departed to the Yukon, 1897, as surgeon to the Royal Northwest Mounted Police. While in the Yukon it seems he was able to take up land grants which eventually became valuable, and which he sold on his retirement from the police. He retired to Toronto in 1900, and after twenty years away from the profession, resumed work in 1920, and was in practise up to the time of his death.

Dr D. A. Clark, Assistant Deputy Minister of Health, died in Ottawa on June 13th. A graduate of Victoria in 1890, and of Toronto in 1891, Dr Clark had practiced in Uxbridge and later in Toronto, where he was known as a practitioner of unusual merit. With the outbreak of the World's War he at once went into the medical corps of the Canadian army and rendered noteworthy service, both as an active front line worker and as an organizer.

Wounded at the second battle of Ypres, he was returned to Canada, in 1917, appointed Assistant Deputy Minister of Health in the federal services. In 1919, he had been actively at his work up to a few months ago, when failing health compelled a retirement. As major in the C A M C Dr Clark was well known throughout the expeditionary force as a courageous and efficient officer. While at Ottawa he was recognized as an official of a most exemplary type.

Dr James Reynolds, a graduate of Dalhousie in 1900, died June 7, 1928, at his home in Upper Stewiacke. He was of a very retiring disposition, a lover of nature, of fishing and hunting, and, having retired from active practice some fifteen years ago, he was not well known by the profession generally. He was, however, a man of very fine intellect and well posted in his work. But once in these later years did he emerge from his retirement, and that was on the occasion of the Halifax explosion when he gave valuable surgical services for forty eight continuous hours.

Dr Sophia G. Laws. The death occurred in Pasadena on May 25, 1928, of Dr Sophia G. Laws of Windsor, N.S. She received her M.D. from the Women's Medical College of Philadelphia in 1903. She registered in Nova Scotia in 1917. Having been on the staff of the Nova Scotia Sanatorium for several years she began to practise in her native town. Being compelled to seek a change of climate she established a small sanatorium and has been in active work for some five years in Pasadena.

Philip Doane McLarren, M.D. C.M., one of the best known and most promising of the younger men in the medical profession in Nova Scotia passed away

May 25, 1928, at the early age of thirty two years. He died at the Victoria General Hospital, Halifax, of pneumonia after but one week's illness.

Dr Philip McLarren was born in Halifax in 1896, the son of Prince Doane McLarren, for many years superintendent for Nova Scotia of the Canada Life Assurance Company. Even in his early college days he showed that unmistakable talent which presages success, and when he graduated from Dalhousie University in 1917 he had the distinction of being characterized by medical men of the city as one of the most brilliant students who ever passed through that institution of learning. During the final year of his studies he was attached to the Staff of the Victoria General Hospital as an interne.

Immediately following his graduation Dr McLarren joined the Canadian Expeditionary Force, and served his country until the conclusion of hostilities. He took a keen interest in the work of the Royal Air Force and, attached to this service, was at one time stationed at Croydon airdrome in England. On his return to Canada he became attached to the Air Board as medical examiner of pilots and personnel, and he was also medical examiner for the Halifax Aero Club. An active member of this latter organization, he took a great interest in its work, and gave generously of his time in furthering its development.

At an early stage in his professional career he identified himself with the Halifax Medical Society, as well as the Medical Society of Nova Scotia and the Canadian Medical Association, having made his membership in all three effective for this current year. Dr McLarren held a teaching position in Dalhousie University and was on the staff of the University Clinic. Just eight months ago he was appointed assistant physician to the Victoria General Hospital.

In the city press, the day following his death, Dr E V Hogan, President of the Victoria General Hospital Medical Board, expressed the following tribute to his memory:

"In the sudden death of Dr McLarren Halifax has lost one of the most promising junior members of the medical profession, and his colleagues, who knew him so well, are stunned with the announcement. He has been cut off in the flower of his youth, when a long and useful life was just beginning to dawn, when the citizens of Halifax, those who knew him, were learning to love and appreciate his learning, his skill, but above all his cheery presence at the sick bedside and his kindly word to brighten the sick one's burden. And it is the poor—God's suffering poor—who will miss him most of all. He fought the fight by day, and by night, and like the gallant soldier that he proved himself in the past war, he fought on and on,

and some may say that he lost the fight and went down to defeat, but we who knew him and loved him will say, "No"—for he won a victory, a victory that was crowned by a glorious death, a martyr to the high ideals of a profession, whose motto is "I Serve."

Dr McLarren's death will be a hard blow to the medical staff of the Victoria General Hospital, for we, the older members of the staff, were looking forward to the day of our retirement, and it was with every confidence that we were preparing to lay down our burden and thrust it on the willing shoulders of our younger confrères, knowing that men of the type of McLarren would carry on and put no blot on the reputation of those who in their turn laid down the burden of alleviating the suffering of the sick poor, and went to their long and last reward.

To the widow and fatherless child our staff offers its deepest sympathy in their irreparable loss, but in the days to come may their grief be somewhat assuaged by the knowledge that his memory will be ever dear to the medical staff of our hospital."

S L WALKER

Dr E Rochette, sole surviving male member of his line in Canada, and one of the oldest physicians in the Province of Quebec, died in Oka on June 18th, after an illness of only a few hours, in his 79th year. The family of the Counts de la Rochette de Roche gonde settled in Canada more than a century ago. Dr Rochette was the last male of the branch here. The head of the family is Count Henri de la Rochette, of Auvergne, France. Other living members of the line are Countess des Bois Hebert Gaste de Tilly, Miss Letitia Rochette, niece, Mrs G W Jolicoeur, wife of the Coroner of Quebec, and a grand daughter, Mrs Henri de B Taschereau, of Montreal.

Dr Rochette graduated from Laval in 1872.

Dr T H Taylor. One of the best known medical practitioners in Montreal West passed away recently, in the person of Dr T H Taylor, formerly superintendent of the Western Hospital. Dr Taylor's death occurred at the Western Hospital, after a short illness, in his forty-sixth year. A native of Cumberland Mills, Que., he was educated at the Quebec High School and McGill University. After graduating from the latter institution he joined the Western Hospital staff as an interne, later becoming superintendent. For the past fifteen years Dr Taylor had practised in Montreal West, residing at 73 Westminster Avenue. He was an Anglican and a member of the Masonic Order. He is survived by his widow and four children.

News Items

BRITISH EMPIRE

The first annual meeting of the College of Surgeons of Australasia took place at Canberra on March 31, 1928. The formation of the College has met with much opposition as may be gathered from editorial comment in the *Medical Journal of Australia* (April 21, 1928).

"There has been a considerable amount of criticism concerning the methods that have been adopted by the founders of the College of Surgeons. This criticism began as a whisper and culminated in a shout. No one appears to challenge the objects of the institution. It seems that exception is taken by some to the endeavour

to apply a hall mark to certain practitioners whose training and experience gave them a right to stand in the front rank of surgeons. It is held that if this hall mark is so distinct that the community at large cannot fail to distinguish it, the reputations and earning capacity of less well trained and less experienced practitioners must suffer. This argument is specious, for it is essentially in the interests of the community that save in emergency surgical intervention should take place under the most favourable conditions. The life and the safety of a patient should not be endangered because a medical practitioner has to make a living

There are many general practitioners who have trained themselves to become skilful and competent as operating surgeons, the reputation of these men is well known to the community in which they live. Their colleagues soon realize their claims and admit their ability. But there are others who pose as surgeons without such justification.

The fact that the College of Surgeons is a self appointed body is an empty proposition. The British Medical Association was founded by a single individual. The Royal College of Surgeons began as a guild of self elected craftsmen and afterwards obtained official recognition and statutory sanction. Again offence has been taken on account of the methods of selection of the Fellows. Mistakes may have been made, but those

who have examined the procedure dispassionately and disinterestedly, will admit that honest caution has been exercised in the selection. Lastly, it has been claimed that the whole of the medical profession or at least the whole of the Branches of the British Medical Association in Australasia should have been consulted in regard to the machinery of the College. Had this been done, the College would have been useless and its essential object would have been defeated. The College of Surgeons of Australasia is a fact, in spite of the opposition. If it exercises wisdom in the manner in which it conducts its business and carries out its functions, it will have a great future. A few minor mistakes and errors of judgment are of small moment. The thing that matters, is that it is fearless in the prosecution of its ideals."

GREAT BRITAIN

William Harvey

The Tercentenary Celebration

"The international celebration in London of the tercentenary of the publication of William Harvey's 'De Motu Cordis' opened on Monday. In the morning the delegates, who had come from all parts of the world at the invitation of the Royal College of Physicians of London, were received by the King at Buckingham Palace, and later in the day they formally presented addresses to the President of the College and listened to eulogies of the man who is regarded as the founder of modern medicine.

Sir John Rose Bradford, President of the College, presented to the King one hundred delegates representing twenty eight countries. In the course of an address he said that Harvey's demonstration that the same blood must flow unceasingly round and round the body, visiting its remotest parts, swept away the visionary speculations of his predecessors and paved the way for a scientific explanation of the purpose of the circulation of the blood. Thus it was that the publication of the 'De Motu Cordis' had been rightly acclaimed as the birth day of physiology and of scientific medicine. His Majesty, in identifying himself with the commemoration of Harvey's work, was but treading in the footsteps of his Royal ancestors. King James I. and King Charles I. both set a true value on Harvey and made him their own physician, and the latter supplied him with the bodies of deer from the Royal herds for his anatomical studies. Harvey constantly brought to King Charles natural curiosities for his inspection, and exhibited to him much of his experimental work. Together also they shared the rare experience of watching the beating heart in a human subject through a defect in the chest-wall produced by disease. In the Civil War, too, Harvey stood by his Royal master, and was present at Edgehill, in charge of the young Princes Charles and James, and afterwards at Oxford, where by Royal mandate Harvey was appointed Warden of Merton College.

The King, in reply, said in part—

'I thank you sincerely for your address. It is a great pleasure to me to join with my people in welcoming the many distinguished men from my Overseas Dominions, and indeed from all parts of the civilized world, now assembled in London in honour of the tercentenary of Harvey's immortal discovery.

'I appreciate the comparison drawn in your address between my part in to day's ceremony and the action of my predecessors, who befriended Harvey in his lifetime. I am proud to think that the Kings of England of that day, recognizing Harvey's great gifts, granted their patronage and help in his work, and are thus entitled to the credit of having contributed to the new birth of medical science.

'The importance and value of William Harvey's work cannot be exaggerated. In an age when physiological knowledge was in a state of darkness and chaos, he laid the essential foundation for a science of physiology by demonstrating not only the fact of the circulation of the blood but the manner in which it took place. He discerned and taught that the true method of scientific progress is by observation and experiment, and it is for this, and not merely as the author of a single discovery, however brilliant and fundamental, that we to day do honour to the name of Harvey.

'Science, as you truly say, knows no boundary of race or nation. Harvey's own career is an instance of this. He was a graduate not only of our own Cambridge but also of Padua, which ancient and illustrious University I am happy to see represented here to day. And we may proudly note that Harvey, in his three fold capacity as a successful physician in private practice, as physician to St Bartholomew's Hospital, and as an eminent student and investigator, foreshadowed what is now, and has long been, characteristic of British physiology—the combination of research with medical and surgical practice, allied with a generous devotion to the service of the poor in the public hospitals.'—*The Weekly Times*, May 17, 1923.

A reception was held in the library of the Royal College of Physicians on May 14th, when the President, Sir John Rose Bradford, received the delegates and distinguished guests in connection with the Harvey Tercentenary. The occasion was made more noteworthy by the conferring of Honorary Fellowship of the College on the Earl of Balfour, Sir Ernest Rutherford, Professor Pavlov, and Professor Wenckebach.

Harvey's connection with St Bartholomew's Hospital was commemorated by a luncheon in the Great Hall on May 15th at which Sir Wilmot Herringham delivered an address on Harvey's work and life.

The celebrations concluded with a banquet given by the Royal College of Physicians at the Guildhall on May 16th, at which a very brilliant galaxy of guests was present.

Other features were the visit of some of the delegates to Harvey's old College of Merton, Oxford, and of others to Gonville and Caius College, Cambridge, where Harvey took his B.A. degree.

The Winnipeg Annual Meeting in 1930

During the past three weeks the Officers and officials of the British Medical Association have been in consultation, in regard to the details of the Winnipeg Annual Meeting, with two delegates specially sent by the Canadian Medical Association for this purpose. These delegates were Dr. T. C. Routley, General Secretary of

the Canadian Medical Association, and Dr J. D. Adamson of Winnipeg, a prominent officer of the Manitoba Medical Association. The arrangements provisionally decided upon will be submitted to the Council at its June meeting, but members will be interested to know that the delegates showed that much thought had been already given to the arrangements in Canada, that every facility for interest and enjoyment will be given, not only at Winnipeg, but in every part of Canada which members can find time to visit, and that the Canadian Medical Association in general and its members in Manitoba in particular, would cordially welcome a large attendance. The representatives of the British Medical Association had the pleasure of entertaining Dr and Mrs Routley and Dr and Mrs Adamson to lunch at the May Fair Hotel on April 25th. Dr and Mrs Routley left for Canada at the end of the week, but Dr Adamson is staying for several months to do some post graduate study, and will be a delegate of the

Canadian Medical Association at the Annual Meeting of the British Medical Association at Cardiff—*Brit. M. J.*, May 5, 1928

A life of exceptional promise has been cut short by the death at Accra, West Africa, of Dr William Alexander Young, director of the Medical Research Institution of the Gold Coast. Young was closely identified with the yellow fever investigation of the Rockefeller Commission in West Africa, and appears to have succumbed himself to yellow fever while carrying on work on that disease. His death follows, within eight days, that of his colleague, Hideyo Noguchi. Another colleague, Dr Adrian Stokes, died last year from yellow fever. These three men have fallen in the active service of humanity.

Young was born in 1889 and was educated at Forfar Academy and University College, Dundee, (St. Andrew's University).

GENERAL

The Twelfth Session of the Health Committee of the League of Nations

The twelfth session of the League Health Committee, held at Geneva from April 30th to May 5th inclusive, was attended by most of the overseas members of the Committee.

The members at present are

President Dr Th. Madsen, Director of the State Serum Institute, Copenhagen

Presidents (ex officio) M. O. Volghe, Secretary General of the Ministry of the Interior and of Health, Brussels, *President of the Comité permanent de l'Office international d'Hygiène publique*, Dr G. Araoz Alfaro, *President of the National Health Department*, Buenos Ayres, and Dr H. Carrière, *Director of the Swiss Federal Public Health Service*, Berne

Members Professor Léon Bernard, *Professor of Tuberculosis at the Faculty of Medicine in Paris*, Technical Health Adviser at the Ministry of Health, Sir George Buchanan, *Senior Medical Officer, Ministry of Health, London*, Professor J. Cantacuzène, *Professor of Bacteriology and Director of the Institute of Experimental Medicine, Bucharest*, Dr Carlos Chagas, *Director of the Oswaldo Cruz Institute, Rio de Janeiro*, Dr Witold Chodzko, *former Polish Minister of Health*, Director of the State School of Hygiene, Warsaw, Surgeon General H. S. Cumming, *Chief of the United States Public Health Service, Washington*, Dr J. H. L. Cumpston, *Director General of the Commonwealth Department of Health, Melbourne, Australia*, Colonel J. D. Graham, *Public Health Commissioner with the Government of India*, Dr C. Hamel, *President of the Reichsgesundheitsamt, Berlin*, Dr Alice Hamilton, *Harvard University*, Dr N. M. J. Jitta, *President of the Public Health Council of the Netherlands*, Professor Ricardo Jorge, *Director General of Public Health, Lisbon*, Dr A. Lutrario, *former Director General of Public Health, Ministry of the Interior, Rome*, Dr Nagayo, *Head of the Institute of Infectious Diseases, Tokyo*, Professor B. Nocht, *Rector of the University and Director of the Institute of Tropical Diseases, Hamburg*, Professor Donato Ottolenghi, *Professor of Hygiene at the Royal University of Bologna*, Professor Gustavo Pittaluga, *Professor of Parasitology in the Faculty of Medicine at Madrid*, Dr L. Raynaud, *Inspector General of the Public Health Service of Algeria*, Dr M. Tsurumi, *Representative of the Public Health Service of Japan*, Dr C. E. A. Winslow, *Professor of Hygiene at the Yale Faculty of Medicine*

A few of the salient features of the report of this meeting are here presented

In the matter of broadcasting information in regard to health conditions in the East, the Epidemiological Intelligence Bureau is now in weekly communication with 140 ports, and in this way all may be accurately posted as to the prevalence and distribution of infectious diseases. Reports have been received from this bureau indicating that yellow fever has reappeared in West Africa.

A program in regard to the interchange of medical health officers and sanitary engineers between different countries, for the purpose of discussing problems of civic and rural hygiene, was drawn up for 1928.

The Committee approved the report and recommendations of the Cancer Commission, including the formation of the expert sub-commissions for the study respectively of occupational cancer and certain aspects of the radiological treatment of cancer. It is known that certain callings (some methods of cotton spinning, the process of briquette-making, work in cobalt mines, one branch of aniline dye work, and work involving contact with tar) increase susceptibility to cancer, but there is a very irregular distribution of cancer in different countries even in the same industries. Valuable lessons on the causation of cancer could be learned from the intensive study of the causes of this unequal distribution. The application of preventive methods also needs enquiry.

The great value of the radiological treatment of cancer has been demonstrated by experience, but there is a lack of agreement as to the precise action of the rays and the best methods of applying them. A study of the basic principles of the methods followed in a number of the most successful institutes in different countries would be of great practical value.

The Committee approved the suggestion of the Smallpox and Vaccination Commission that the enquiry into the incidence of smallpox in Europe should be continued and extended to North America and the Dutch East Indies. At the present moment there is very little smallpox in Europe, which makes it possible to study closely such cases as appear, in order to determine, for instance, the exact rôle played by vaccination in reducing sickness and deaths, and to study the value of measures to prevent any future increase of the disease. There is a good deal of mild smallpox in Great Britain and Wales, but the continent is almost free of the disease. The Commission is also studying a number of points concerning the preparation, use, and effect of different vaccines.

The Committee took note of a memorandum submitted by Dr Jitta on the possible dangers resulting

from the increasingly widespread use of x rays, and requested the Medical Director to ascertain the existing laws or regulations on this subject in different countries and any other information bearing on action that has been or should be taken to obviate such dangers.

The Health Committee noted that the enquiry into infant mortality in Austria was concluded last December, and that in Great Britain in January, and the enquiries in the other European countries were still under way. The preliminary enquiries in Latin America are concluded, and the enquiry, properly so called, is being carried out in certain districts in Brazil, Uruguay, the Argentine Republic and Chile for a period of twelve months.

As in previous years special courses on malaria, followed by a stage of practical work in malarial countries, have been arranged, and are this year to be held in London, Hamburg, Paris and Rome. Fourteen scholarships are awarded for these courses by the Health Organization, in addition to those provided by the International Health Division of the Rockefeller Foundation.

The Council of the League of Nations recently adopted a resolution concerning the recommendation of the International Opium Convention, to which Canada is a signatory, to the effect that Eucodal and Dicode are narcotics capable of producing harmful results similar to those specified in the Convention, and should subsequently be subject to its provisions. They, therefore, recommended to the states signatory to the International Opium Convention that action be taken in regard thereto. As a result, the Government of the Dominions of Canada has passed an Order in Council, which comes into effect on June 12th, adding these to the schedule of the Opium and Narcotic Drug Act.

An Order in Council has also been passed cancelling the last paragraph of Section 2 of the Regulations issued under the Opium and Narcotic Drug Act reading:

"All licenses issued under this Act are subject to cancellation in the event of a licensee being found guilty of an offence against any of the provisions of the said Act."

substituting the following therefore:

"Licenses issued under this Act are subject to cancellation at the discretion of the Minister."

International Conference on Cancer

An International Conference on Cancer, convened by the British Empire Cancer Campaign, will be held from July 16th to 20th in London, at the house of the Royal Society of Medicine. Physicians, surgeons, pathologists, and radiologists from all parts of the world, whose work has been closely associated with inquiry into the causes and cure of cancer, will attend, and the Royal Society and all the principal universities, medical schools, and

scientific bodies of this country have appointed delegates. Sir John Bland Sutton, Bt, vice-chairman of the Grand Council of the Campaign, will preside, and Sir Richard Garton, chairman of the Finance Committee, is acting as honorary secretary of the Conference. On Wednesday, July 18th, H.R.H. the Duke of York, President of the Campaign, and the Duchess of York will receive the delegates and their wives at Lancaster House (London Museum), which has been lent by the trustees for this purpose.

A representative delegation of Canadian x-ray men will be present at Stockholm for the Second International Convention on Radiography, including Dr. Bauld, of Montreal, Dr. A. Stanley Kirkland, of St. John, Dr. Hamish MacIntosh, of Vancouver, Dr. Geo. MacNeil, of London, Dr. Geo. Malcolmson, of Edmonton, Dr. Patterson, of Ottawa, Dr. A. H. Pirie, of Montreal, Dr. C. W. Prowd, of Vancouver.

International Medical Post-Graduate Courses in Berlin

These are arranged, with the help of the medical faculty of the University, by the Lecturers' Association for Medical Continuation Courses and the Kaiserin Friedrich House. Part of the courses take place at any time, part, only in October, 1928.

I PERMANENT COURSES

1 Courses for 2 to 4 weeks

2 Courses, as guest assistants in clinics, hospitals, and laboratories, for 2 to 3 months or longer, for gentlemen desiring to do practical work under systematic supervision.

II COURSES DURING OCTOBER, 1928

1 A general course on "Survey of progress in the whole medical field," with special reference to pulmonary diseases, October 1 to 13, 1928.

2 A special course for nose, throat, and ear specialists, October 8 to 20, 1928.

3 A post graduate course on paediatrics, October 15 to 27, 1928.

4 A post graduate course on "New methods of diagnosis and therapy," with practical studies and exercises, in the wards and laboratories of the Friedrichshagen City Hospital.

5 Single courses in all special fields of medical science, including practical work.

The courses are held in German, but numerous professors are able to lecture in the English, French and Spanish languages.

The Office assists in procuring suitable lodgings, gives information re cost of stay, and arranges visits to clinics and operations, etc.

The office quarters are in the Kaiserin Friedrich-Haus, Luisenplatz 24, Berlin, NW 6.

NOVA SCOTIA

A number of nurses recently graduated from the training school of the New Waterford General Hospital, with appropriate ceremonies.

Miss Strum, Superintendent of Nurses, Victoria General Hospital, Halifax, has been elected president of the Association of Graduate Nurses of Nova Scotia.

The new Hospital for Infectious Diseases, Halifax, is approaching completion, and it is expected that it will be opened towards the end of June.

It is announced that plans are nearly complete for a new hospital, with accommodation for one hundred patients, for the Halifax Infirmary. The Infirmary is conducted by the Sisters of Charity, and has had a highly creditable career in its present building on Barrington Street which goes back over many years. For the new building a much quieter site has been selected, on Queen Street, at the corner of Morris Street. The new hospital is to be of fireproof construction, and will embrace all the latest ideas in the way of convenience and equipment.

A dispute between the Sydney City Council and the City Hospital Board has held up the appropriation of funds for a new x ray plant for the hospital. It seems that the Hospital Board favour the appointment, as roentgenologist, of a physician who has had much experience at x ray work. The City Council, on the other hand, wish the position to go to a nurse who has had training in x ray technique. Neither side seems willing to yield, but the mayor has threatened the Hospital Board that if the appointment made by the Board is not cancelled, the hospital will not get its new x ray equipment. The hospital is owned by the City of Sydney.

Much regret has been expressed in Halifax at the removal of Staff Captain Clarke from the Grace Maternity Hospital (conducted by the Salvation Army). Staff Captain Clarke has been associated with Grace Hospital since its opening, and has shown much tact and wisdom in the direction of the institution during the trying times of the years of establishment. She has won the confidence and esteem of the people of Halifax. Before leaving Halifax, to take charge of the new maternity hospital at Ottawa, Staff Captain Clarke was made the recipient of a very substantial present from the ladies' auxiliary of Grace Hospital.

In the early morning hours of May 25th, fire was discovered in the Highland View Hospital, Amherst, which had already reached such proportions that, before the fire department could respond to the summons, it had spread practically throughout the building. Heroic work on the part of nurses and other members of the resident staff was rewarded by the safe removal of all the patients. Two of the nurses had a very narrow escape. The hospital was delightfully situated on high ground at a considerable distance from the centre of the town, and unfortunately, the firemen found themselves without a supply of water sufficient to cope with the flames. In consequence, within a few hours nothing but the brick exterior walls remained standing. It is understood that the insurance carried was \$100,000.00. Those in residence in the building lost all their effects, and several of the Amherst doctors lost instruments, etc. Dr A. E. MacKintosh lost his entire operating outfit, including a portable table which he had left in the hospital over night. The directors of the hospital decided at once to take over two large residences for temporary use. The Victoria General Hospital, Halifax, immediately expressed a complete operating room equipment, and the General Public Hospital, Saint John, offered such assistance as it could give. Within a very short time the hospital was carrying on in its temporary quarters, and one of the first to undergo a surgical operation was a veteran physician of Amherst, Dr C. W. Bliss.

Mr Evan Parry, consulting architect to the Federal Department of Health, spent some days in Amherst in conference with the hospital authorities relative to a new building, and Dr M. T. McEachern announced that the American College of Surgeons would be glad to assist by submitting plans, and otherwise. A new building will be constructed, but the matter of site has not yet been determined.

Dr J. P. McGrath, Kentville, has returned home after spending eight months in graduate study in the British Isles and on the continent.

Dr F. R. Little, Halifax, declined to accept nomination for reelection to the presidency of the Halifax County Conservative Association at its recent annual meeting, but was elected honorary president of the organization.

In order to meet a technical requirement of a state board of medical licensure, Dr S. J. Turel, who gradu-

ated from Dalhousie in 1917, returned to his Alma Mater this year for re-examination in the subjects of the final year in Medicine, and passed with distinction in every subject.

While in Montreal studying recent developments in medicine, Dr W. T. Purdy, of Amherst, was suddenly stricken with appendicitis. He was obliged to enter hospital at once, and was promptly operated upon. While for some days his condition was critical, it is learned that he is now progressing nicely and will soon be able to return home.

Dr W. D. Forrest has been re-elected chairman of the City Health Board, Halifax.

The May Examinations of the Provincial Medical Board resulted in the addition of twenty three names to the Medical Register of Nova Scotia.

At a meeting of the Provincial Medical Board, held on May 11th, only routine business was conducted. Nearly all the newly appointed members were present. Dr H. K. MacDonald, and Dr G. H. Murphy, Halifax, and O. B. Keddy, Windsor, were appointed to fill vacancies on the executive committee, caused by the retirement of Drs MacAulay, Hogan, and Sponagle.

The annual meeting of the Western Counties Branch of the Medical Society of Nova Scotia was held at Yarmouth on May 29th under the presidency of Dr G. W. T. Farish. After a paper by Dr A. E. Campbell had been read and discussed, Dr Elliott P. Joslin, of Boston, delivered an exhaustive and informing address on "The treatment of diabetes." This was followed by an animated discussion in which a large number took part, and which carried on to so late an hour that it was decided to adjourn until June 11th, when routine business and the election of officers will be disposed of and attention given to a communication from the Medical Society of Nova Scotia.

The Halifax Branch of the Medical Society of Nova Scotia is making arrangements for the unveiling of a memorial in honour of the founders of the Medical Faculty of Dalhousie University. The special committee, having the matter in hand, are securing a bronze tablet inscribed as follows—

In Memory of the Founders of the
Faculty of Medicine of Dalhousie University
1867

W. J. Almon, M.D., President	E. D. Farrell, M.D.
A. P. Reid, M.D., Dean	A. H. Woodill, M.D.
A. G. Hattie, M.D.	J. D. Ross, M.D.
G. Lawson, Ph.D., LL.D.	T. B. Almon, M.D.

Rev. James Ross, Principal Ex Officio

"They Built Better Than They Knew"

Placed by the Halifax Branch of the Medical Society of Nova Scotia.

1928

The cost of this tablet is to be met from branch funds. The Committee further suggest the placing on the wall in the medical building of enlarged photographs of early important persons connected with the Medical School. It is intimated that in this item doctors outside the city of Halifax might be interested.

W. H. HATTIE

An exceedingly important meeting of the Executive of the Medical Society of Nova Scotia was held in the Board of Trade Council room, Halifax, June 1st, from 7 to 11 p.m., with representatives present from the Dalhousie Refresher Course Committee, the Halifax Branch Society, and the Committee on the Dalhousie 60th Anniversary celebration.

The first business endorsed the mail ballot of the executive postponing the annual meeting until the fall and combining it with the annual Refresher Course of the Medical College.

The General Secretary for the Society reported that out of a possible membership list of 385 the first drafts had brought 265 fees. It was noted that some 30 more would complete their membership most certainly before the annual meeting. (As a matter of fact, at the present writing the list numbers 275.) The membership aimed at was 300 and there is no doubt but that the Society will "go over the top."

The Secretary was instructed to convey to the Valley Medical Society the appreciation of their courtesy in giving place to the Halifax Society as hosts for the annual meeting. The necessary steps were taken to hold the annual meeting during the week beginning October 15th, in conjunction with the annual Refresher Course of the Medical College and its 60th anniversary. The Society meeting being the 75th annual meeting, plans were approved to have fraternal greetings presented from all the other provincial associations present at this the Canadian Medical Association will co operate in furnishing speakers.

In case any visitors may think our hotel accommodation is not sufficient, it may be noted that the new Lord Nelson Hotel will be open to the public that week. The Society will therefore share in the opening festivities, the hotel being the official headquarters. All other Provincial Associations will be invited to send representatives to assist in the anniversary proceedings and the Refresher Lectures. A number of matters of general concern were laid on the table till after the Canadian Medical Association meeting in Charlottetown, as they would be dealt with then by the general body.

The announcement of the arrangements for the primary examinations in Canada for the Royal College of Surgeons was noted with approval, and publicity ordered to be given through the *Bulletin*. The establishment of Fellows of the College of Physicians of Canada was regarded as likely to do much to elevate the standing of the profession, and it was resolved that full publicity be given this matter also in the *Bulletin*.

The Executive considered that the proposed legislation introduced into the Canadian Senate, making venereal disease an impediment to marriage, was very desirable but the proposal was too drastic for adoption at the present time. The necessary instructions were issued to ensure the continuation of the publication in the lay press of weekly health articles that have been furnished for the past six months. These articles, as published under the auspices of the Society, were regarded as the best of their kind the press of Nova Scotia has ever had.

Full approval was expressed of the increased size of the *Bulletin*, and its mailing to every practitioner in the Maritime Provinces. It was felt that the amount of extra labour involved was but an expression of hearty sympathy with the Prince Edward Island men in their

undertaking the Canadian meeting, the additional cost to be adjusted with the Canadian Medical Association. The Executive extended fraternal greetings to the Medical Association of Newfoundland, which meets in annual session the week following the Prince Edward Island meeting.

A special Committee, consisting of the General Secretary, Dr G H Murphy, Dr Johnston of the Halifax Society, Dr Curry of the Dalhousie Refresher Course, and Dr McKenzie for the Dalhousie Anniversary, was appointed to do the necessary preliminary work in connection with arranging for the big medical week in October. It is safe to say this will be the big event in the history of medicine in Nova Scotia.

The annual meeting of the Pictou County Branch of the Medical Society of Nova Scotia was held in Pictou on Wednesday, June 13th, for general business. The scientific part of the program was carried out the latter part of March, when Drs Adamson and McKay, of Winnipeg, were the chief speakers, each giving two addresses. It may be noted that the first meeting of the Medical Society of Nova Scotia to be held outside of the city of Halifax was also held in the town of Pictou. We are not sure, but it is quite probable that Pictou was selected as being the home town of Dr John Stewart who had then just recently come to Halifax.

The entire city of Halifax and the many friends of Dr G H Murphy were shocked to learn, the latter part of May, that his son, Arthur, a fourth year medical student at Dalhousie had been the victim of the "Hit and Run" motor car "skunk" driver. For several days his life hung in the balance. He had a severe scalp wound, three broken ribs, besides numerous bruises, and suffered severely from concussion. It was almost incredible to know that he managed to crawl home unaided almost half a mile. All will hope that the guilty person may be found and receive a lesson that will last him for life and be a warning to other such despicable characters.

The twenty four graduates of the Medical College this year are all settled for the present. It appears unfortunate that most of them are doing hospital service in the U S A, for the majority are then lost to Canada.

Dr Daniel McIntosh of Pugwash, an octogenarian over fifty years in practice, had his car turn turtle recently, but fortunately he escaped with a bruising and general shaking up. Yet, in a few days, he was back again looking after his practice in the community in which he sought refuge after a thrilling experience in a near by town some fifty years ago. He is an Honorary Member of the Medical Society of Nova Scotia, and is a regular attendant at medical meetings.

S L WALKER

NEW BRUNSWICK

In the Provincial Legislature recently an item for \$100,000.00 was put through the Finance Committee as an appropriation to provide a sprinkler system in the Provincial Hospital for the Insane at Saint John.

The public health legislation at the present session of the legislature in New Brunswick includes a recommendation to reduce the quarantine period for scarlet fever from six to five weeks.

The Board of Commissioners in the Saint John Public Hospital has authorized the purchase of another

radiographic unit in the X Ray Department, which will provide for two complete units operating in parallel, greatly increasing the efficiency of the department, which is coming more and more to serve the Province of New Brunswick as a whole.

The Federal Department of Indian Affairs has agreed to provide fifteen beds at the Saint John County Hospital for Indian patients, and also to pay the per capita cost for their maintenance. The department has also provided a nurse to look after the tuberculous Indians of Prince Edward Island and New Brunswick.

EPHEDRINE HYDROCHLORIDE "Frosst"

1— *The effects following the administration of Ephedrine are more prolonged than those of Epinephrine*

2— *Ephedrine, unlike Epinephrine, is absorbed from the alimentary tract without loss of pharmacological activity*

The field, previously restricted by the fleeting action of Epinephrine and the fact that the drug has always to be injected and therefore requires administration by a physician or nurse, has been very considerably widened by the introduction of Ephedrine. In the short time that it has been used, this drug has proved itself one of our most valuable therapeutic agents.

Ephedrine Hydrochloride "Frosst" is offered in the following forms —

TABLETS—MOULDED

For Oral or hypodermic use

No 277—Ephedrine Hydrochloride	¼ gr
No 278—Ephedrine Hydrochloride	⅜ gr
No 279—Ephedrine Hydrochloride	½ gr
No 280—Ephedrine Hydrochloride	¾ gr

SOLUTION

Ephedrine Hydrochloride 3% in distilled water 1 oz Bottles

Crystals ⅓ oz and ¼ oz vials. 1 oz Bottles

INHALANT—NASAL SPRAY

Ephedrine (Alkaloid) 1% in neutral oil, colored and pleasantly perfumed. 1 oz Bottles

— INDICATIONS —

Tablets

IN SURGICAL SHOCK—and in other cases of acute circulatory collapse, where the immediate increase of blood pressure is frequently a life saving measure, Ephedrine in doses of ½ to 2 grams, given by vein, hypodermically, or by mouth, will produce the desired rise in blood pressure, longer sustained than that effected by epinephrine.

IN HAY FEVER and ASTHMA—especially in the allergic and reflex groups, the daily administration, by mouth, of 1 to 5 grams in divided doses has afforded relief in a very large percentage of cases.

IN ASTHMA—due to infection, while the results are not so consistently good, the relief afforded to about 30% of these cases justifies its trial.

IN SPINAL ANÆSTHESIA—the fall in blood pressure may be anticipated and prevented by the administration, by mouth or hypodermically, of 1 to 2 grams of Ephedrine Hydrochloride just previous to induction of anæsthesia.

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LOCAL APPLICATION—of Solution of Ephedrine results in the shrinkage of inflamed and congested mucous membranes. Its action here is more prolonged than that afforded by Epinephrine, and, in addition, the after irritating effects are usually absent.

NOTE—Solutions of Ephedrine Hydrochloride may be sterilized by boiling.

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CANADA

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Hospital Day was the occasion for broadcasting a talk on hospital affairs through Station CFBO, at Saint John, by Mr Ralph H. Gale, Superintendent of the General Public Hospital. The replies following this broadcasting intimated that it had been well received.

Dr A. A. Rowan, recently of the Riverglade Sanatorium, has been transferred to the St Anne de Bellevue, D.S.C.R. Hospital, where he will handle the tuberculosis branch.

Dr G. G. Melvin and Dr Wm Warwick recently spent several weeks as guests of the Rockefeller Foundation, visiting several Public Health Areas in the United States. It is felt that much benefit will accrue from this visit of the senior Health Officers in the Province.

During the last few weeks most of the hospitals in the province have held their graduation exercises and at most of them medical men have been asked to give

the addresses to the graduating class. Dr H. A. Farris was the speaker at Moncton at the Nurses' Graduation. Dr Stewart Skinner, of Saint John, was the speaker at the General Public Hospital and his speech was doubly interesting from the fact that for a long time he has been ill, but is now apparently well. His recovery gives great satisfaction to his friends.

Dr Stanley Bridges is at present in Boston doing intensive study in paediatrics. Dr Bridges intends to specialize in diseases of children on his return to Saint John.

Dr Vincent Doucet of Richibucto has been awarded the French Government Scholarship for 1928-29. He will continue his French Course in medicine at Paris.

Dr A. Stanley Kirkland will sail on June 15th for Europe for a two months' course of study. During this time he will attend the second international convention of radiography at Stockholm. A. STANLEY KIRKLAND

QUEBEC

The Hospice St Charles, badly damaged by fire on December 14th last, when thirty children lost their lives, will be repaired in the near future.

The St François d'Assise Hospital is to have an annex built in the near future, a building permit having been issued by the municipal department of the Public Works, at a cost amounting to \$135,000. The contract calls for the completion of the work by September next year. The annex will be used as a residence for the nuns who operate the hospital.

The activities of the Crippled Children's committee of the Rotary Club for the last year were detailed in the annual report. In view of the keenly felt need in Montreal for accommodation for convalescent crippled children, they felt justified in equipping a ward containing sixteen beds at the Refuge de la Merci, 361 St Paul Street, to be entirely devoted to this purpose. The budget showed that the entire \$950 appropriated for this cause had been spent, together with an additional \$300, contributed by members for special cases. The report read in part: "Seven hundred and fifty dollars were donated by Miss Tyndale to apply on the cost of food for the operation of the summer camp for crippled children at St Sulpice, Quebec, which was opened the first week in July, 1927, and operated for a period of eight weeks. The committee is convinced that the summer camp is a wonderful thing for the good of the crippled children on the Island of Montreal, and the committee would strongly recommend that future Rotarian Crippled Children's committees carry on in assisting the operation of the camp. During the year nineteen cases of crippled children were handled by the committee."

The second annual meeting of the Laurentian Sanatorium Association, which was held recently, revealed the fact that the total deficit is \$82,182. The President, Louis Colwell, pointed out that the deficiency for the year 1927, amounting to \$47,771, was caused by the maintenance of 160 beds for the indigent for whom the Association receives only \$1.34 per day, whereas the actual cost of maintenance is \$2.37. Mr Colwell said that it was possible that at an early date the institution would be compelled to make its first appeal to the public on behalf of the tuberculous, in order that the accumulated deficiency might be wiped out, and also to provide additional and much needed accommodation. He announced that in future it would be necessary for the Association to adhere strictly to the terms of its contract with the Provincial Government. "From the point of view of medical treatment of those suffering from tuberculosis, we feel that the association has every right to be proud of its record. The report of the resident medical superintendent will clearly demonstrate the curative value of our institution which has been visited during the last year by leading specialists from the United States, Great Britain, and France and all these have been unanimous in their praise of the treatment and care given to our patients." The average daily number of patients was 223. The average number of paying patients was 54, showing that the average number of indigent patients was 169. "It is impossible for the Association to carry on with a net loss of 93 cents per hospital day for indigent patients. While we actually received an average daily number of 169, but in no case can it afford to receive a greater maximum number than this. In that case, it may prove that the average number of public patients will be much less than received this year." Dr J. E. Byers, told the members of the Association that the sanatorium maintained by them was the cleanest institution in which he had set foot. He commented also upon the happy home life of the patients while sojourning in the institution. Many of them were reluctant to return to the city when pronounced cured, for they had come to regard the sanatorium as their home.

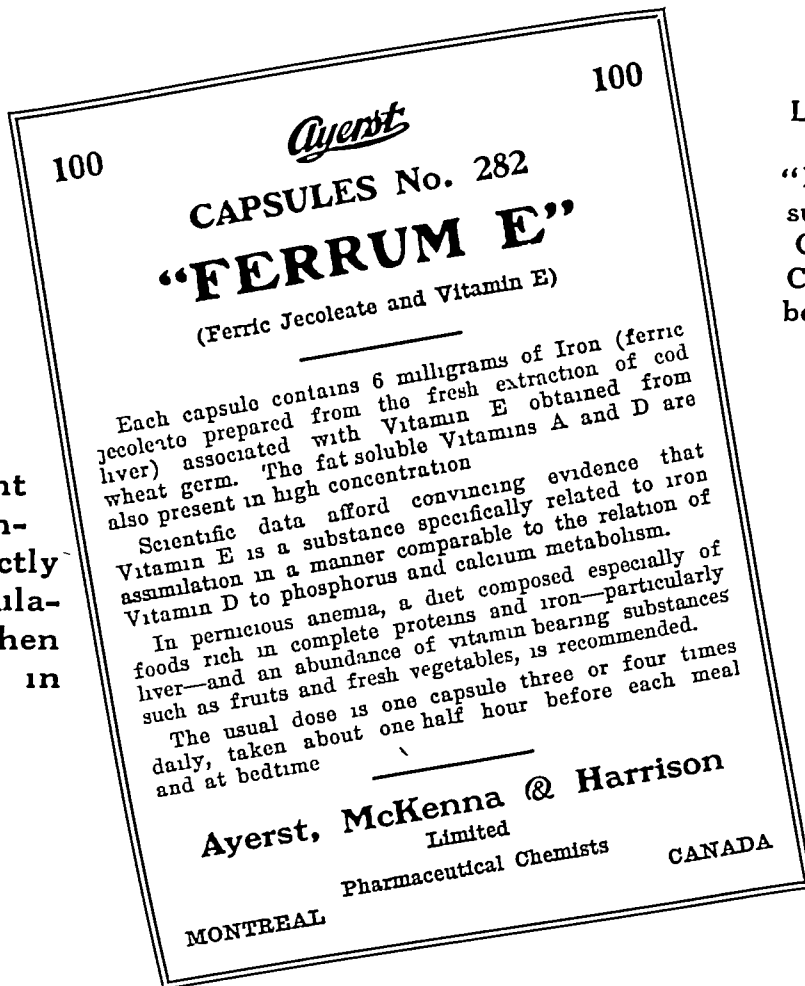
On April 1, 1925, the University of Montreal opened a health centre at 655 Demontigny Street east, the Montreal Anti Tuberculosis and General Health League, the Metropolitan Life Insurance Company and the Provincial and Municipal Health Department contributed their financial support to the undertaking, which was placed under the medical supervision of Dr Baudouin and the management of Nurse Edith Belle Hurley. It was called the School of Nurse Edith Belle Hurley. The University of Montreal, and its definite aim was to cut the rate of infant mortality in the city. Nurse Hurley, with the co-operation of four visiting graduate nurses, assisted by 10 nursing students, has achieved splendid results. At first the school's effort was concentrated in the health work to be done in the parish of

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- CANADA

Ste Catherine It was afterwards extended to take care of the needs of numerous families in the parish of the Sacred Heart Both parishes have a heavy population and it had been known to the authorities that their infant death rate was very high When Nurse Hurley and her colleagues took charge of the work the death rate among infants aggregated an average of 220 per 1,000 births As a result of a concentrated effort carried out scientifically, this rate of 220 per 1,000 has been reduced in less than five years to 86 per 1,000 This is said to be the most splendid achievement ever attained on the North American continent in so short a period As a direct consequence, and taking into account the heavy average of infant mortality in Ste Catherine's parish, the general toll of child death in this city, which was in 1923, of 148 per 1,000, has been reduced in 1926 to 119 The infant death rate from 1916 to 1925 in Montreal was of 165.1 per 1,000 Miss Hurley's health centre is the only health organization in America doing preventive vaccination against tuberculosis Since June 26, 1926, more than 600 infants have been inoculated with Calmette vaccine The vaccine is administered in three inoculations, on the third, fifth, and seventh days after birth At the inception of her work, Miss Hurley found that most of infant deaths were due to bottle feeding, under unsanitary conditions She has steadily advocated maternal feeding, and when found impracticable or inadvisable, she has given simple and efficient directions to mothers on sanitary feeding Thus, through more sanitary feeding, and through immunizing infants against the scourge of tuberculosis by the Calmette vaccine, Nurse Hurley, seconded by a small staff of most capable and zealous assistants, has achieved results unknown in any other great city of North America.

A drop in both birth and mortality figures for the city of Quebec was shown in the statistics just issued by the Provincial Bureau of Health The first three months of the year, as compared with the same periods in the two preceding years, show a marked decrease in all

figures and more especially in infant mortality of under one year

In comparison, Montreal is shown to have a birth rate below the provincial average The marriage rate is above average and the death rate is just a shade below average The city of Quebec has fewer marriages, more births, and more deaths, in percentage

Dr A Grant Fleming, who has been Acting Director of the Department of Public Health and Preventive Medicine at McGill, during the past year, becomes the Director of that department

Dr Georges Prefontaine, professor at the University of Montreal, left Montreal recently to pursue special studies at Roscoff, in the Finisterre department, France, where the Faculty of Sciences of the University of Paris maintains a laboratory for deep sea zoological research Professor Gerard Gardner, of the same university, is leaving soon for Paris He will complete his post graduate studies in bacteriology at the "Institut Pasteur," under Professor Pettit

GEORGE HALL

Under the auspices of the Post Graduate Committee of the Province of Quebec Medical Association, a certain group of doctors of Montmagny organized a clinical day on May 22nd last, and invited, as well as the members of the profession of the county of Montmagny, their colleagues of the counties of Bellechasse and l'Islet. The great majority of the members of the profession answered the call, and considering the pitiable condition of the roads (it had rained for three consecutive days) the attendance was a marked success

Immediately following the meeting, a new Medical Society was formed comprising the physicians of the three above mentioned counties The officers elected were Dr Richard, of Montmagny, President, Dr Dion, of l'Islet, Vice President, and Dr Paradis, of Saint Gervais, Secretary

LÉON GÉRIN LAJOIE,
Secretary

ONTARIO

energy and persistence the success of the reunions in the past is largely due At the dinner in the evening the details of the lives and activities of the absent and deceased members were presented, and each present was called upon to inform the class of his present behaviour and condition. The thanks of the class were expressed to the Brantford physicians, whose initiative had made the gathering such an unqualified success N B GWYN

The infant death rate in Toronto in 1910 was 158.5, in 1927 was 58.8 The death rate from tuberculosis in 1910 was 130.0, in 1927 was 61.6 The death rate from typhoid fever in 1910 was 44.2, in 1927 was 11 The general death rate in 1910 was 15.1, in 1927 was 11.0

MANITOBA

buildings At Lady Willingdon's request, the scholars in the sanatorium school were granted a half holiday Their Excellencies were greatly interested in the x-ray and examination rooms and also the arrangements for heliotherapy

The annual meeting of the Winnipeg Medical Society was held in the Medical College on May 18th Dr Oliver S Waugh, the retiring President, read an address on "The future of medical practice" The election of

The class of "Toronto 1896" was entertained at Brantford, on June 6th, by the members of the class resident in that city—Drs Marquis, Bier, Hicks and Nicol. An unusually good representation of the class arrived to take advantage of the hospitality arranged for by the Brantford brotherhood. A buffet lunch at the Brantford Golf Club, afternoon golf, a sight seeing tour in Brantford, and a dinner in the evening made up a very full program. Members of the class from New York, Owen Sound, Goderich, Niagara Falls, Toronto and places nearby, constituted a gathering of seventeen at lunch, and twenty at dinner The class reports and business details connected with the re-union were presented by Dr W E Silcox, of Hamilton, to whose

On May 16th their Excellencies, Lord and Lady Willingdon, and the vice regal staff, accompanied by the Lieutenant Governor of Manitoba, Hon Dr E W Montgomery, Minister of Health, Hon D L McLeod, Municipal Commissioner, Mr John McEachern, Chairman of the Manitoba Sanatorium Board, and other distinguished Winnipeg citizens, travelled by special train to Nette for an inspection of the Sanatorium Dr D A Stewart, superintendent of the institution, received the visitors and conducted them through the various

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Pediatricists noticed a difference in Cod Liver Oil and asked Mead Johnson and Company to make an investigation as to the origin of various cod liver oils

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FIRST to place on the market a biologically assayed and standardized cod liver oil

FIRST to own and operate their own factories and rendering stations, thus controlling the oil from the time the fish were caught until it was placed in the bottles for the market

FIRST to place the oil in brown bottles, thus preventing the destructive effects of light

FIRST to use a proper seal to prevent the entrance of air causing oxidation of the oil

FIRST to arrive at standard laboratory methods for testing the oil for Vitamin A and Vitamin D

FIRST and only to test the oil from the livers of each catch of fish in preference to blending a number of batches of oil before testing. In this way batches of oils that do not come up to standard are rejected

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Infant Diet Materials Exclusively

BELLEVILLE, - - - ONTARIO

THE CANADIAN MEDICAL ASSOCIATION JOURNAL

officers resulted as follows President, Dr A T Vathers, Vice President, Dr Lennox Arthur, Secretary, Dr Wm Creighton, Treasurer, Dr M R MacCharles, Trustee, Dr S Campbell

A contract for the construction of St Anthony's Hospital and a power house, to be erected at The Pas, has been awarded to J Albert Tremblay, of Winnipeg. The hospital will be a four storey fireproof building and will contain room for 125 patients. The operating rooms will be complete and up to date in every detail. The completed building will cost \$250,000, and will be opened next January.

The annual meeting of the Manitoba Medical Society will be held in Winnipeg on September 10th and 11th.

Miss Cowan, daughter of the late Dr William Cowan, a veteran Hudson's Bay Company surgeon, has presented to the Medical Library of Manitoba University some interesting old books formerly owned by her father.

Dr C R Rice has been appointed Attending Surgeon to Grace Hospital, Winnipeg.

Dr Gordon S Fahrni of Winnipeg presided at the annual meeting of the American Association for the Study of Goitre at Denver, on June 18th, 19th and 20th.

John Stanley Hough, K C, president of the Winnipeg General Hospital Board of Trustees since 1921, died on June 7th, at the age of 72. His passing is greatly regretted at the General Hospital, as for many years he had taken a keen personal interest in its welfare.

A large number of Manitoba doctors attended the meeting of the American Medical Association at Minneapolis.

Dr A. W. Allum has left Winnipeg to practice in Los Angeles. For many years Dr Allum was on the staff of Grace Hospital, and was also Lecturer in Obstetrics in the medical faculty.

ROSS MITCHELL

SASKATCHEWAN

At the regular monthly meeting of the Regina and District Medical Society, held May 9th, following a dinner at the Kitchener Hotel, Regina, Dr W A Dakin of Regina gave an excellent paper on "Hydronephrosis, causative factors, diagnosis, and treatment." There was a good attendance, and the paper was much enjoyed, as shown by the discussion that followed. Dr Dakin illustrated his paper by slides which he had prepared from cases.

At the previous meeting, the matter of care and education of defective children, and those who are deaf, dumb, or feeble minded in any way, in Saskatchewan, had been discussed. Drs U Gareau, O E Rothwell, and Lillian Chase, were appointed a committee to report at the meeting held May 9th. They brought in the following resolution, which was passed—

"Whereas Chapter sixty of the Revised Statutes of Saskatchewan, and part four thereof, makes provision for detention and committal of defective children, and, whereas, the general opinion of authorities is that defective children are not suitably provided for when admitted to mental hospitals, and, whereas, the practice at present existing in this province is to provide for the care of defectives in the mental hospitals,—There be it resolved, in the opinion of this branch of the Saskatchewan Medical Association, that the time has now arrived that the Government of Saskatchewan should earnestly be petitioned by the Provincial Body to make immediate provision for a suitable home, in order that the best interests of these unfortunates may be attended to and our Act more efficiently administered."

During the last week in May and the first week of June another post graduate tour was conducted in this province. The speakers at these meetings were Dr M R MacCharles and Dr H D Morse of Winnipeg.

P L STRATH,
Secretary

The meeting in Regina, on June 4th, commenced in the morning when Drs MacCharles and Morse held consultations. At 12:15 p.m. a luncheon was held in the General Hospital, followed by a clinical discussion of such cases as presented. In the evening at 6:15 p.m. a dinner at the Hotel Saskatchewan was followed by addresses by the distinguished visitors.

Dr Morse gave an illustrated address on "The management of prostatic obstruction," and Dr MacCharles gave another on "A few experiences with malignant disease." They were exceptionally thorough treatises on the subjects, and were much appreciated by the local doctors of Regina and the district.

Dr MacCharles invited medical men of this district to co-operate with the Winnipeg and Manitoba men in making a real success of the visit of the British Medical Association to Winnipeg in 1930. Assurance of active support was given by men of the Regina and District Medical Society.

In Yorkton, there were eighteen doctors present at the meeting. Lectures were held in the afternoon, followed by a dinner, after which lantern lectures were given by the visiting team. This was an extremely successful meeting.

The Battleford District Medical Society had thirteen present at its meeting, which was held at the Mental Hospital, and a very hearty vote of thanks was moved to the visiting speakers for their splendid addresses. Meetings were also held at Moose Jaw, Saskatoon, Prince Albert, Swift Current, Weyburn, all were very successful and well attended.

The North Eastern District Medical Society held their annual meeting on May 28th, when the following officers were elected President, Dr D R Livingstone, Melville, First Vice, Dr W E Somers, Foam Lake, Second Vice, Dr D Baldwin, Benito, Executive, Dr S M Rose, Yorkton, and Dr Findlay, Lemberg, Secretary, Treasurer, Dr A F Land, Yorkton, Representative to the Association, Dr A F Laird, Yorkton.

BRITISH COLUMBIA

been an active member of the Association in minor offices for the past few years. Dr Theo H Lennie was elected Vice President, Dr Lennie is the popular Secre-

At the annual meeting of the Vancouver Medical Association, held on April 24th, Dr Walter S Turnbull was elected President for 1923-29. Dr Turnbull has

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tary of the British Columbia Medical Association Dr G F Strong was again elected Secretary, and Dr J W Arbuckle will act as Treasurer

The question of closer co operation, or amalgamation, between the local and provincial Associations is a live topic in Vancouver and the province generally just now, and will be thoroughly discussed at the annual meeting of the British Columbia Medical Association next week. The Vancouver Association has already voted in favour of the proposed closer union

Dr F Epplen, of Seattle, addressed a meeting of the Victoria Medical Society on May 8th, giving an illustrated talk on "The diagnosis of kidney conditions." Dr M W Thomas, the President, was in the chair

The Victoria Medical Society held a luncheon on May 16th, at the Empress Hotel, when Dr Hermann M Robertson addressed the members, dealing in a most interesting manner with "William Harvey," thus being the tercentenary of the revelation by the immortal Harvey of the circulation of the blood. Dr Robertson was warmly thanked by the society, on motion of Dr H E Ridewood, who spoke briefly of the value and interest in the series of lectures on Masters of Medicine inaugurated last month, when Dr Thomas McPherson delivered an address on "John Hunter," whose bi centenary was thus celebrated

Dr Hermann Robertson showed a copy of William Harvey's work in Latin and English, "*Exercitatio Anatomica de Motu Cordis et Sanguinis in Animalibus*," first published in 1628

The annual meeting of the No 6 District Medical Society, Vancouver Island, was held on May 7th, at Nanaimo, when an appreciative audience listened to lectures given by Dr G F Strong, of Vancouver, on "Blood pressure," and Dr Lyon H Appleby on "Intestinal obstruction" and "Strangulated hernia." Dr Wallace Wilson, President elect of the British Columbia Medical Association, also spoke on the activities of the provincial Association. Officers for the past year were re elected. Dr A. D Morgan, Alberni, President, Dr W E J Ekins, Nanaimo, Vice President, and Dr O Ingham, Nanaimo, Secretary Treasurer

The annual meeting of the British Columbia Medical Association was held at the Empress Hotel, Victoria, on June 11th and 12th. A full report will be published in the next issue of the *Journal*

The Fraser Valley Medical Society reports that it has recommended to the Royal Columbian Hospital that it secure a basal metabolism machine. The annual meeting of the Society will be held in June

Much post graduate work is in store this year for the medical profession in this province. June 5th to 8th, Summer School at Vancouver, June 11th and 12th, at

Victoria, June 13th and 14th, at Kamloops, June 18th, at Fernie

The elaborate program of the Vancouver Summer School has already been published. At Victoria, Kamloops, and Fernie, clinical addresses will be given by Dr F A C Scrimger, V C, Dr F H MacKay, both of Montreal, and Dr Andrew Hunter, of Toronto. The meeting in Victoria will be held in conjunction with the annual meeting of the British Columbia Medical Association. A very complete program, scientific, business, and social, has been arranged. The entertainment part has been given special attention, and those who had the privilege of attending the Canadian Medical Association Convention in Victoria two years ago will know what this means. In July, Drs H B Cushing, of Montreal, and Dr A W Canfield, of Toronto, pediatricians, will visit the following places, giving lectures under the auspices of the Canadian Medical and British Columbia Medical Associations. July 3rd, Victoria, July 4th, Nanaimo, July 5th, New Westminster, July 6th, Chilliwack, July 7th, Vancouver

In August and September Dr A T Bazin and Dr A H Gordon, of Montreal, and Dr Gordon Bates, of Toronto will tour the province, giving lectures at the following places: Cranbrook, Grand Forks, Kelowna, Vancouver, Victoria, Nanaimo, Chilliwack, Prince Rupert and Prince George

The Summer School of the Vancouver Medical Association will be held the first week in June. Already the sale of tickets is highly satisfactory, and a good attendance is assured. This will be the eighth annual summer school to be promoted by the Vancouver Association

The new buildings which are being erected for the Vancouver General Hospital are making good progress and it is anticipated they will be ready for occupation about the New Year. The new buildings are a private ward pavilion and a maternity wing, which, together, will provide 240 beds

The graduating exercises of the training schools of the Vancouver General and St. Paul's Hospitals were held during the past month. Seventy nurses graduated from the Vancouver General and twenty eight from St Paul's Hospital

Taking revenge for their defeat in Seattle on April 26th last, the Vancouver and Victoria medics met and turned back the Seattle invaders on the links of the Vancouver Golf and Country Club on May 10th, to the tune of 94½ to 67½ points

Dr G Morse of Port Haney has left for two or three months' post graduate work in the east. His practice during his absence is being cared for by Dr A. K. Connolly

Our deepest sympathy is extended to Dr A. S Underhill of Kelowna, B C, on the death of his mother, Mrs. M J Underhill, of Vancouver, on May 13th

J EWART CAMPBELL

UNITED STATES

It is announced that Dr F D'Herelle, one of the world's leading bacteriologists, a Canadian, but for years a resident of Paris, will become professor of bacteriology at the Yale medical school. He is best known for his development on the subject of bacteriophage and has made important contributions in many fields of pure and applied bacteriology

Still retaining his Canadian citizenship, he went to

France to acquire his education. At the close of the war he went to Indo China and made a study of the relationship of bacteriophage to hemorrhagic septicemia, including plague in man and in animals

Upon his return from Indo China, he spent some time at the Pasteur Institute and then went to the University of Leyden. At this university he received the degree of "M.D., *honoris causa*"

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CANADA

Book Reviews

Gynæcology Howard A. Kelly, A.B., M.D., LL.D.,
and others 1043 pages, 767 illustrations D
Appleton & Co., New York, 1928

This is a remarkably good book. That it should be so is not surprising, when one remembers the extent of Dr. Kelly's personal contributions to operative gynæcology and the contributions of his associates to gynæcological pathology. From a tremendous storehouse of drawings and pathological material a master has selected a series of original plates and drawings suited to depict all that is known of the anatomy, physiology and pathology of the female genitalia, then around these illustrations there has been woven a legend, primarily by Dr. Kelly himself, but also by numerous others, such as George Ward, Gellhorn, Burnham and Rubin, whose names carry authority in their special departments. Others, less well known, have been chosen by Dr. Kelly to write upon those subjects with which he personally knew them to be familiar.

"Anatomy" (Kelly), illustrated by the already well known drawings of Brodel, is followed by "Histology" (Glenn Craig) with numerous new illustrations, particularly of changes in the endometrium. A full description of gynæcological examinations and diagnostic aids, carries definite statements on the relative values of the different procedures. Special chapters deal with "Amenorrhœa," "Dysmenorrhœa," "Endocrinology and Organotherapy," "Congenital Malformation and Developmental Defects," "Sterility" (Wharton), "Periuterine Tubal Insufflation in Sterility" (Rubin), others treat of "Leucorrhœa," "Pruritus," and "Dyspareunia." Then follows, for the surgeon, perhaps the most interesting portion of the book, an extensive survey of operative procedures with sound advice on technique, pre-operative and post-operative care. This is naturally, for the most part, by Dr. Kelly, but the section dealing with pelvic floor plastics by George Gray Ward is so well written and well illustrated that one realizes, here particularly, the good judgment of the author in the choice of collaborators. The pathological section is interesting and complete, the chapter on endometriometria, by Lewis, being particularly timely. Protein therapy is dealt with by Gellhorn, radium by Burnham, and x-ray by Fricke, while Peterson has contributed a chapter on pneumoperitoneal roentgenology.

The above is a bare statement of some of the features of this remarkable book, which from its preface to its very end is full of words of wisdom. Indeed, after reading the preface, it is doubtful whether one would be willing to put it away, for, there, in a few words, the writer has compressed the history of gynæcology in America, has given honour to those who were his predecessors and contemporaries, and characteristically has pointed out the value of the contributions of younger men, so many of whom worked with his inspiration. A great clinician, a keen observer, and possibly the most expert operator in the field of gynæcology, has produced a book, which for that subject will take a place comparable to "Oler" in the field of medicine.

Pharmacotherapeutics Materia Medica and Drug Action
Solo on Solis Cohen and Thomas Stotesbury Githens, Dr. Appleton & Co., 1928

As implied by the title, this book covers a wide field and not only is the undertaking ambitious but it

is carried out on an elaborate scale. The interesting historical note on the origin of "mithridatism" is an example of the detail. It has been attempted to produce something more than the ordinary pharmacological text book, by considering drugs from the point of view of the practitioner of medicine who finds that where the pharmacologist is able to be definite and exact regarding the action of drugs, he himself often experiences indefiniteness and not seldom contradiction. He finds, for instance, that there are drugs whose action on bacteria *in vitro*, or in animals, in no sense corresponds with their clinical value, witness the deadly effect of quinine on the pneumococcus, but its entire lack of specific action in pneumonia in man.

This is but one instance of how much clinical experience and laboratory experiments may diverge from each other. If they are to be reconciled a good step has been taken in the cause by bringing them together under one cover, according to the plan of this volume. In the main, drugs have been classified on a clinical basis, but due attention has always been paid to their chemical and pharmacological aspects. As regards the latter, it is a question whether there is not rather too much detail for the needs of the practitioner, but thoroughness is a good quality in which to be extreme.

The introductory chapters afford some interesting reading, although the style is not particularly easy. After an outline of the field to be covered, and some general definitions, a chapter is devoted to Disease and Recovery, with much laborious analysis. Chapter III is devoted to Indications and Contraindications, with many sound and useful hints. After this, the main theme of the book is begun in the chapter on "Drug Influence," with an exhaustive discussion of the many factors involved, physico-chemical, such as electrolytic dissociation, colloids and enzymes, hormones, the various forms of intra and extracellular influence, modification by function, general and selective actions, personal factors, such as idiosyncrasy, pathological factors, drug addiction, and sensitization.

A large amount of information with regard to the source and preparation of drugs is given, and a section is devoted to their therapeutic use, in which methods of administration are taken up in detail. There is a well balanced criticism of homœopathic doctrines under Schools of Medicine.

The classification of remedial agents has been made in accordance with (1) their uses in medicine ((a) to combat the excitants of disease, (b) to alter tissue, (c) to modify function, (2) their dominant influences—which necessarily determine their chief use, (d) their predominant chemical components or proximate principles. As a minor point of criticism, it may be pointed out that the only mention given lipodol is as a remedy for bronchomomiasis whilst bismuth salts are referred to as those to be used for radiographic examination of the bronchial tree.

The work is well up to date, and judicious selections have been made of these therapeutic agents which are still on probation. Under Metabolic Adjuvants, for example, only the well known endocrine extracts are given place.

In general, the book is a thoroughly sound and comprehensive exposition of modern therapeutic methods, and will be useful to student and practitioner alike.

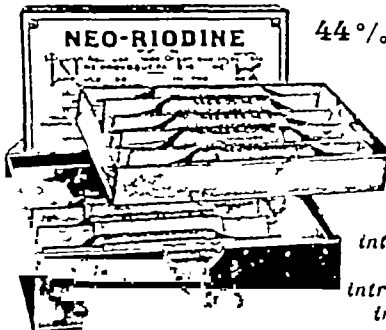
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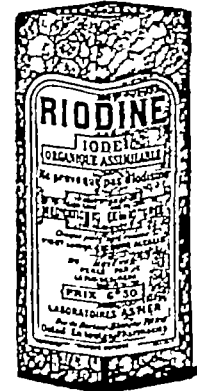
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Clinical Examination of the Nervous System. G H Monrad Krohn, M D, F R C P Fourth edition 209 pages, 55 illustrations Price 7/6 H K Lewis Co, 28 Gower Place, London W C 1, England, 1928

One may know at once that a manual of examination methods that reaches its fourth edition in seven years has not only found a place for itself but is being kept up to date. The first of these beliefs finds confirmation in the widespread use of the book by general practitioners, neurologists and teachers, the second, in the recent date of references in the book.

The object of the author has been to present a system of examination that, while not too long, will yet bring out all the significant details of functional disturbance that the case presents. One can only say that the object has been satisfactorily attained. The marks of long experience, both as clinician and teacher, are in evidence everywhere. A point that one especially notes with pleasure is a definite attempt to bring together the methods of neurology and psychiatry. The separation of these really inseparable subjects has been a detriment to both, and has been suffered much too long. Another point that will have an appeal is that the book is not a translation but is written in English by Professor Monrad Krohn himself. The disabilities of most translations are absent and the style is clear and emphatic. Only occasionally does one note expressions and constructions that are exotic.

The book is primarily intended for students, and much emphasis is placed on the inculcation, not only of an orderly and careful method of examination, but also of an orderly method of diagnosis based upon anatomical and physiological knowledge. The futility and uncertainty of trying to diagnose nervous disease by comparison of observations with text book lists of the characteristics of various clinical entities is emphasized, and will rouse an affirmative echo in the mind of those who practice and teach neurology.

There is no need to review in detail the author's presentation. One need only say that all the usual methods receive due notice, many of the less frequently used are mentioned, and throughout point and savour are added by interpolations from the author's own experience or from recent contributions to the literature. The illustrations are all good. Some of the diagrams are those most used in text books on neurology, but there are others of value that are new. The many half tone reproductions are remarkably clear and relevant.

The book covers different ground, but, in the present reviewer's opinion, is in the same class with Bings' *Compendium of Regional Diagnosis*, and that is saying a great deal. A T MATHER

Schizophrenia (Dementia Præcox) Edited by Charles L Dana, Thomas K Davis, Smith Ely Jelliffe, Henry Alsop Riley, Frederick Tilney, and Walter Timme. 491 pages and 61 illustrations. Price \$7.50. Paul B Hoeber, Inc, New York, 1928.

This volume is number five of the series published by the Association for Research in Nervous and Mental Disease. It consists of the papers read at the meeting of the Association in New York in December, 1925. Most of the recent advances in this extremely interesting subject are discussed by thirty-one contributors, including the leading American authorities in psychiatry.

The twenty-six chapters are classified according to subject matter into nine sections as follows: Historical Survey and Delimitations, Statistics, Heredity and Constitution including Personality, Special Etiological Considerations, Investigative Aspects, Language and Art Productions, Pathology, Prognosis, and Treatment. The book is thus comprehensive in scope and treats of practically all phases of dementia præcox from its philosophical implications to its biochemical and endocrinological aspects.

This work shows that the knowledge of dementia præcox has increased considerably since Kraepelin first described it as a specific disease entity in 1898. There has also been a marked change in point of view since the Kraepelinian emphasis on course and outcome, with its rather pessimistic outlook. The present tendency is towards a greater emphasis on psychological factors, both in symptomatology and in etiology. There is thus frequent use of such terms as maladjustment, disintegration, and to use Bleuler's expression, schizophrenia. In this connection, the discussion of the physical and mental personality types in schizophrenia and other psychoses will be found particularly interesting because of the light it throws on normal personality. Other contributions of special interest are those on language and art productions, autonomic and gastro-intestinal functions, and the relation of schizophrenia to other conditions such as alcoholism, acute infectious diseases, epidemic encephalitis, and the psychoneuroses.

A valuable feature of the book is the reproduction of the discussion which followed the presentation of each paper. Many otherwise obscure points and divergencies of view are thus brought to light. The book contains photographs of Kraepelin and Bleuler, the two psychiatrists who have contributed most to the understanding of dementia præcox. It also contains a number of very good bibliographies following special articles. It has an index of subjects and authors, and an appendix consisting of a list of members of the Association for Research in Nervous and Mental Disease. This book will be found both interesting and instructive to all physicians who wish to keep abreast of the times in their knowledge of schizophrenia and allied conditions.

J W BRIDGES

Principles and Practice of Obstetrics. Joseph B DeLee, A M, M D, Professor of Obstetrics at the Northwestern University Medical School. 5th edition. 1140 pages, 1128 illustrations. Price \$12.00. London and Philadelphia, W B Saunders Co, Toronto, McAnish & Co, 1928.

The appearance of a new edition of DeLee's *Obstetrics* is an event of importance in obstetrical circles. Dr DeLee is a stimulating writer and teacher and his book bears the impress of his personality. Whether one agrees unreservedly or not with all his conclusions, one has to acknowledge the great range of his experience, his ability as a teacher, his wide acquaintance with the literature of his subject and his desire to enhance the dignity of the art of obstetrics.

In this edition considerable space is devoted to prenatal care. Dr DeLee remarks that there is no field in preventive medicine that offers the prospect of such glittering returns in saving human life and misery. He insists on the importance of pelvimetry, especially internal pelvimetry.

The chapters on the treatment of hyperemesis, eclampsia, abruptio placentæ, placenta prævia, rupture of the uterus, postpartum hæmorrhage, breech presentation and forceps operations have been almost completely rewritten. The modified Simpson forceps is preferred to axis traction forceps.

The low Cæsarean section, or laparotrachelotomy, an operation which offers many advantages, especially in possibly infected cases, over the classical section is well described and illustrated. The Gottschalk-Portes two stage Cæsarean section for preserving the uterus in frankly infected cases is described briefly.

The illustrations of injuries of the birth canal and the technique of perineorrhaphy and repair of the cervix bring out the surgical anatomy of the parts and are really helpful.

Although the book contains over eleven hundred pages it can be handled conveniently. The publishers,

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ROSS MITCHELL

Diagnosis of Disease Hobart Amory Hare, B Sc, M D, LL D Ninth edition 528 pages, illustrated Price \$5 50 Lea & Febiger, Philadelphia, 1928

It is hardly possible to dwell too constantly on the importance of noting symptoms rather than of depending on artificial aids to diagnosis. In Maitland Ramsay's words "There is too little study of what used to be called the face and mind of disease."

This idea has constantly guided Dr Hare in his excellent work, now in its ninth edition, and deservedly so. He has managed to compress a large amount of material into a small compass. If any one chapter were to be singled out for praise it might be that on the "Thorax and its viscera." In this he has discussed methods of examination and symptoms with directness and simplicity, and has employed illustrations that are unusually satisfactory.

H E MACDERMOT

The Extra-Ocular Muscles. A Clinical Study of Normal and Abnormal Ocular Motility Luther C Peter, A M, M D, Sc D Professor of Diseases of the Eye in the Graduate School of the University of Pennsylvania 294 pages, illustrated with 98 engravings and 5 coloured plates Price \$4 00 Lea & Febiger, Philadelphia, 1927

This work is based on lectures given by the author in the Graduate School of Medicine of the University of Pennsylvania. It is a sound, practical, and interesting clinical presentation of the subject of normal and abnormal ocular motility, and as such can be cordially recommended.

Our criticisms are that the text is marked by a looseness of expression which, though it does not seriously obscure the writer's meaning, does detract from the literary value of the book, and that, though the paper and printing are good, and the illustrations numerous and well chosen, the binding leaves something to be desired.

Practical Dietetics in Health and Disease Sanford Blum, A B, M S, M D Third edition 380 pages Price \$4 00 F A Davis Co, Philadelphia, 1928

The prescribing of dietaries makes frequent demand on the practitioner's time and thought. A book such as this therefore has a considerable place to fill. One of its first characteristics should be convenience of arrangement, and this has been striven for even at the expense of a good deal of repetition. The plan of taking certain cases briefly described and laying out diets for them is useful.

The directions regarding infant feeding are clear and easy to follow in the home. There is a rather noticeable lack of reference to the use of cod liver oil in the early months, and fruit juices are not introduced into the scheme of feeding until the sixth month.

The book has reached its third edition within five years and it is obvious that care has been taken to keep it well up to date.

H E MACDERMOT

The Art of Anæsthesia Paluel J Flagg, M D, Visiting Bronchoscopic Anæsthetist, Manhattan Eye and Ear Hospital Fourth edition revised 384 pages, 135 illustrations Price \$5 50 J B Lippincott Co, 201 Unity Bldg, Montreal, 1928

Dr Flagg's book, the fourth edition of which has recently been issued, is nothing if not practical. In it are described not only those methods which are in daily use in large modern clinics, but also those that are practicable in private houses and in small hospitals where money to spend on equipment is strictly limited.

In the author's opinion ether retains its place as the most suitable anæsthetic for routine use. He has not much to say in favour of oil ether rectal anæsthesia, having found this method unreliable, and the preparations for it often distressing to the patient. An accurate estimation of its dangers, as he points out, cannot be made because the deaths from it have been allowed to go unreported.

The subjects of local and spinal anæsthesia might, with advantage, have been dealt with a little more fully. The chapters on "Carbon Dioxide and Re-breathing," and upon "Emergency Anæsthesia" are excellent.

Not all experienced anæsthetists will agree with the author's statements that there is no advantage in heating ether vapour, and that the preliminary dose of morphine and atropine should be omitted when the open method is to be used.

Those who are familiar with the literature published on the treatment of sudden arrest of the heart during anæsthesia will be surprised to find that nothing is said of the direct injection of adrenalin into the heart.

The reader unfamiliar with the American spelling and use of words will read this book with a feeling almost of bewilderment. For instance, "doze" and "yoke" are spelt respectively "dose" and "yolk." When we find "technique" spelt both "technique" and "technic" we find ourselves wondering whether "physique" and "physic" in the author's mind have the same meaning. It is a relief to find that Dr Flagg allows the word "anæsthesia" to retain its diphthong. When we read of a patient "who died spontaneously a few minutes before the anæsthetic was administered" we are forced to the conclusion that the anæsthetist was either unobservant or absent minded.

The illustrations are many and good, and the book full of useful hints to practitioners and students.

W B HOWELL

BOOKS RECEIVED

Clinical Surgery. An Introduction for Junior Students J W Dowden, M B, F R C S E 68 pages, price 2/- net Oliver & Boyd, Edinburgh, 1928

A short and pleasantly written introduction to surgery, with most attention paid to the method of examination.

Health Record for Women. J Theron Hunter, M D Published by Williams & Wilkins, Baltimore, 1928. A diary in blank for recording physical infirmities.



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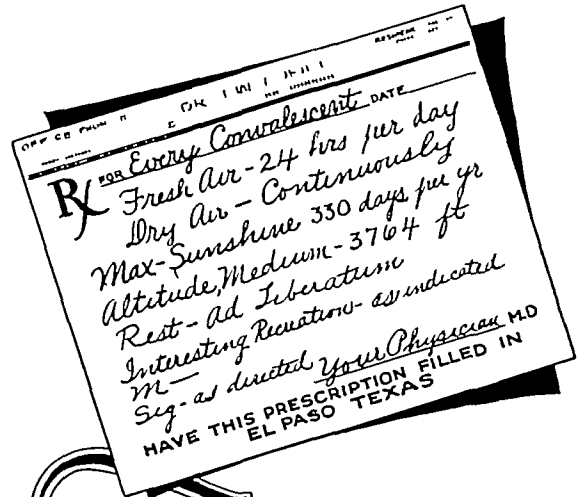
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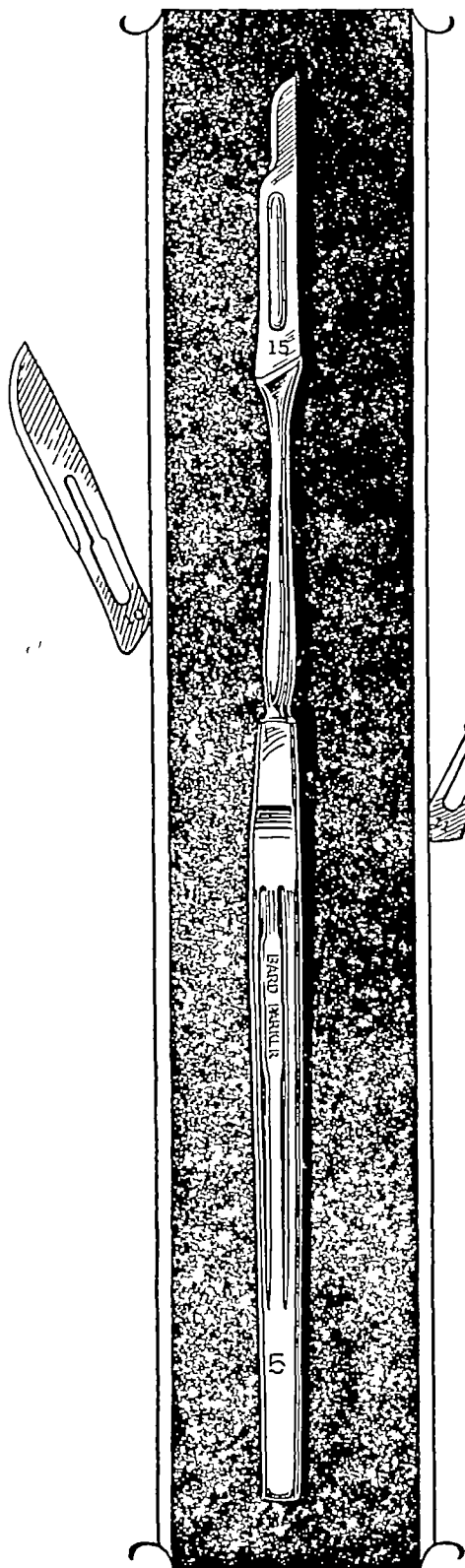
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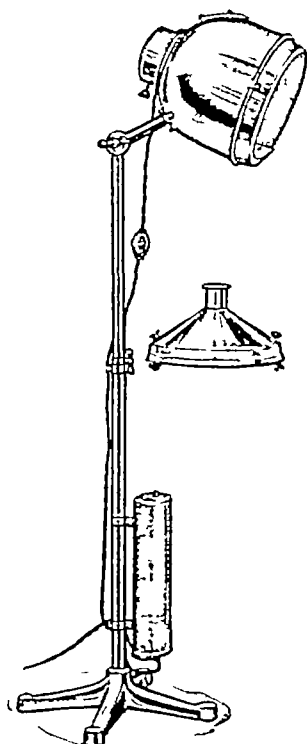
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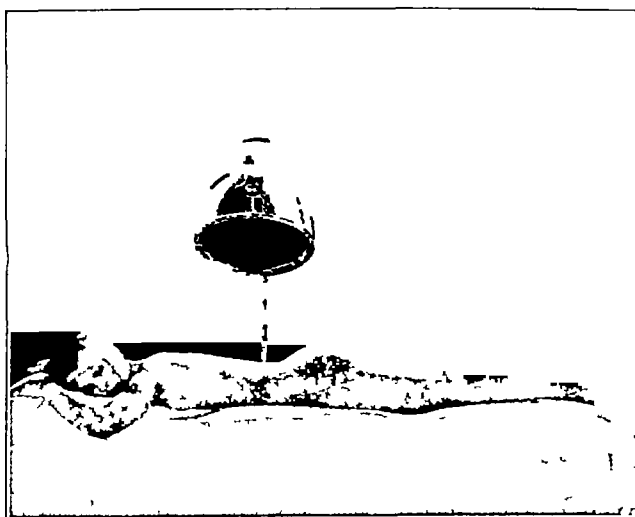
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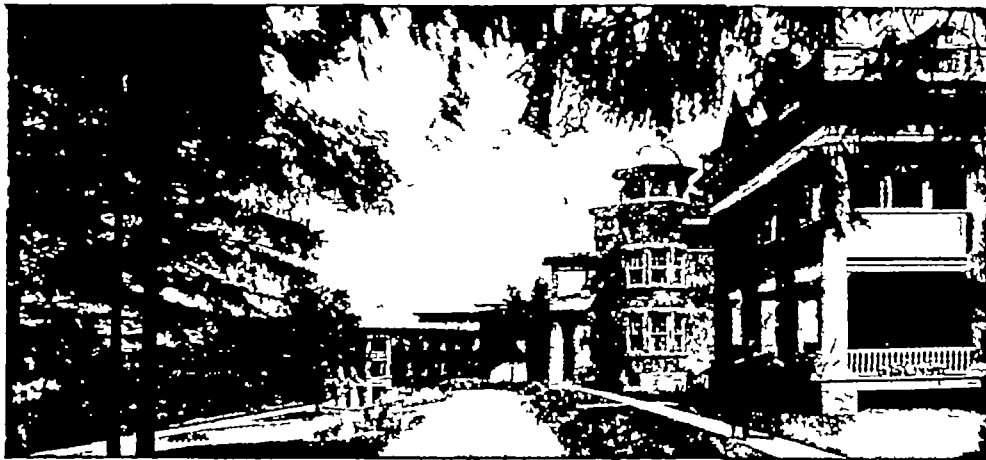
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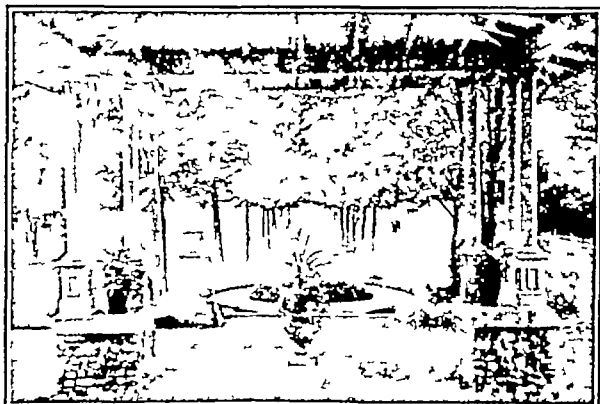
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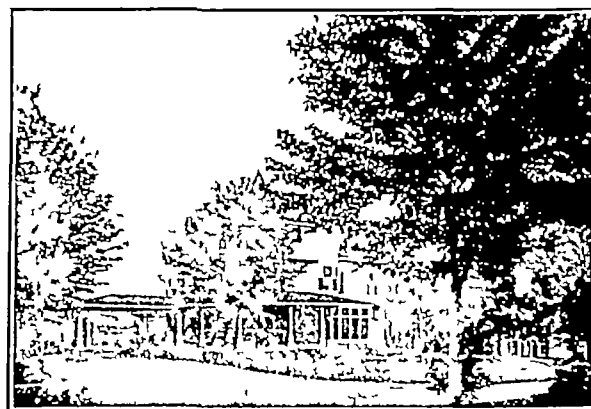
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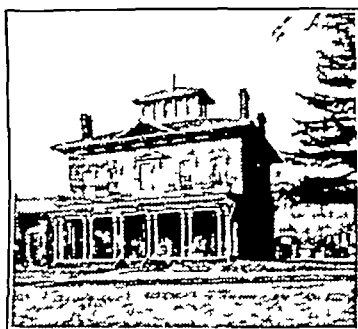
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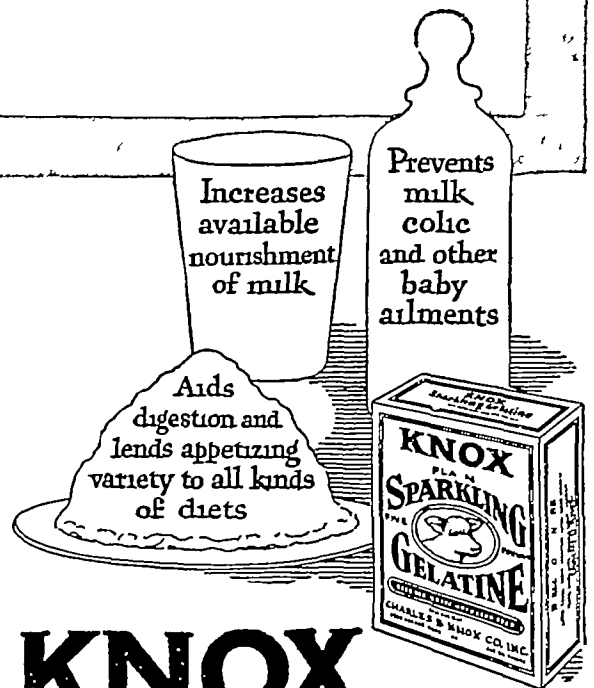
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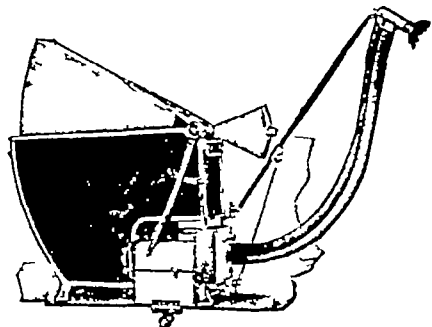


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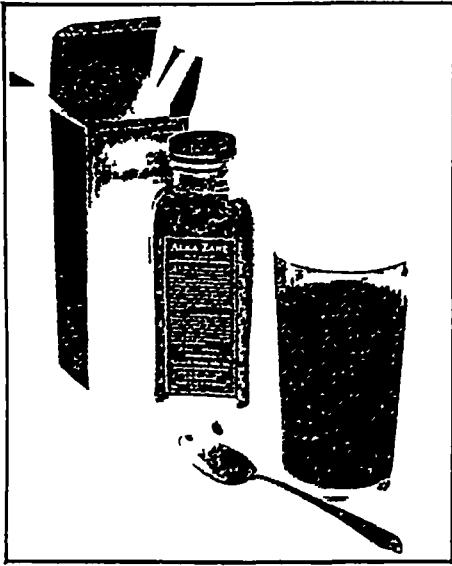
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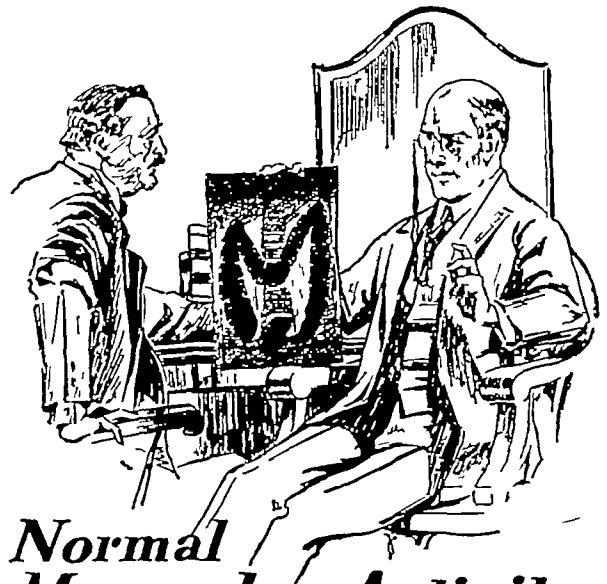
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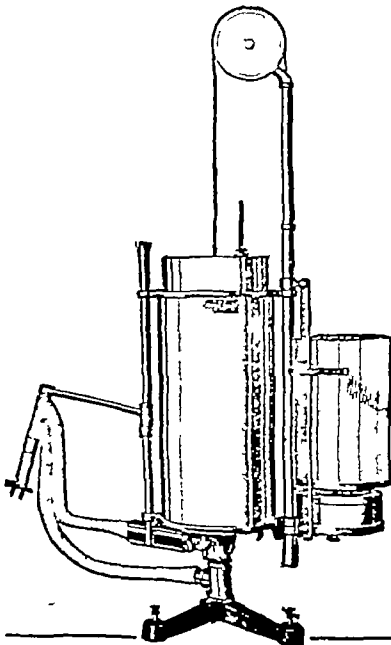
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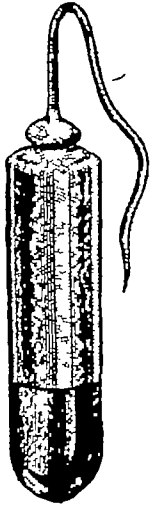
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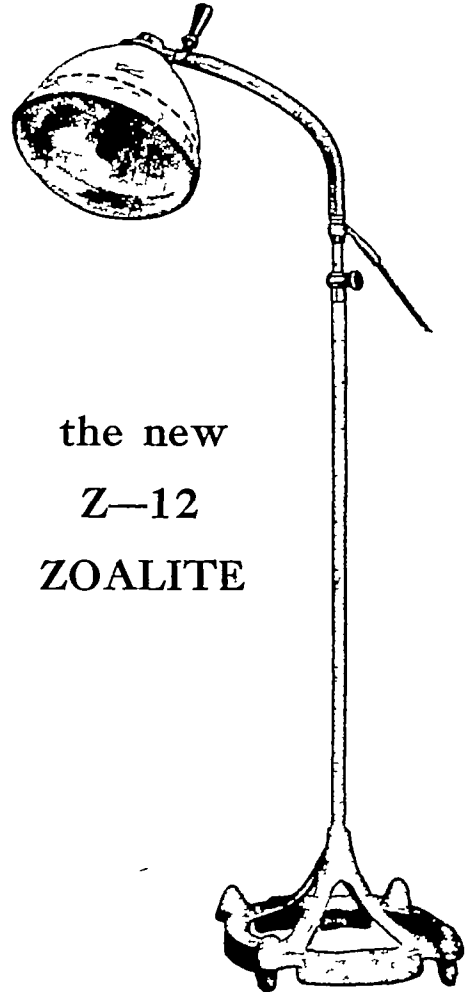
A—Ichthyol Compound, Glycerin and Boro-Glyceride 50% Ichthyol 25% Resublimed Iodine 14% Carbolic Acid (absolute Phenol) 5%, Powdered Hydrastis 1% B—Ichthyol 10% Glycerin and Boro-Glyceride 50% C—Protargol and Ichthyol (Each 2%) Glycerin and Boro-Glyceride 50% D—Opium, Belladonna and Hyoscyamus Glycerin and Boro-Glyceride 50% Powdered Opium 2 grains Extract of Belladonna 1 grain Extract of Hyoscyamus 2 grains. E—Glycerol of Tannin 50% F—Ichthyol Compound with Silver Iodide Glycerin and Boro-Glyceride 50%, Ichthyol 25%, Iodine 14% Phenol 5% Powdered Hydrastis 1% Silver Iodide (made soluble by Potassium Iodide) 1% G—Glycerin and Boro-Glyceride, Glycerin and Boro-Glyceride 50% Resublimed Iodine 25% H—Plain Glycerin Gelatin base

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Antiphlogistine



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Iodine	0 01 %
Boric Acid	0 1 %
Salicylic Acid	0 02 %
Essence of Menthol	0 002%
Essence of Gaultheria	0 002%
Essence of Eucalyptus	0 002%
Mineral Clay	54 864%

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All Sections—NORTH—EAST—SOUTH—WEST—All Seasons

Adequately and accurately covered by
ARLCO-POLLEN EXTRACTS
for Diagnosis and Treatment



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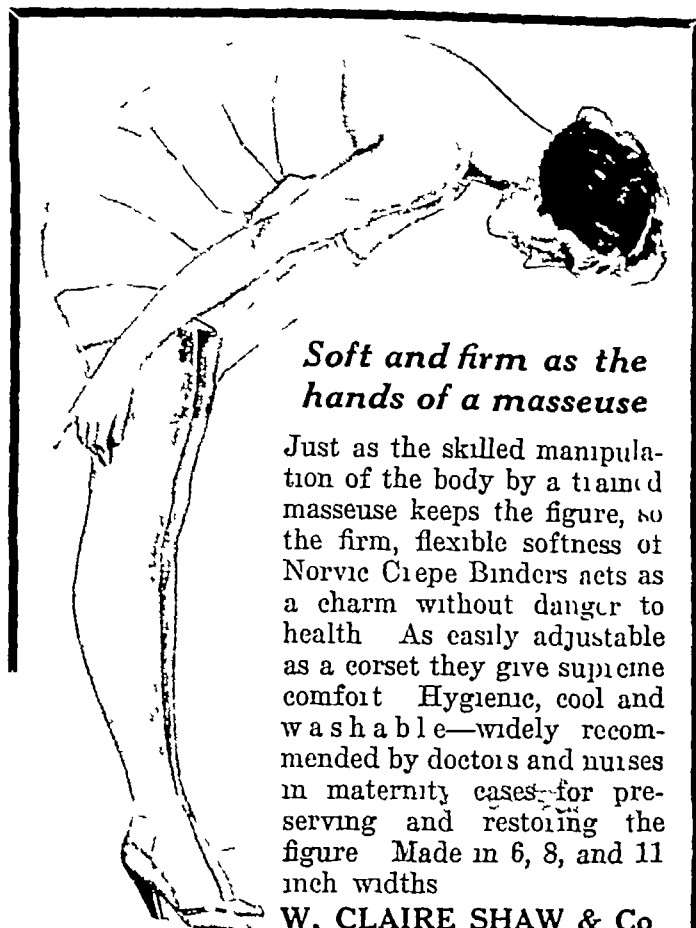
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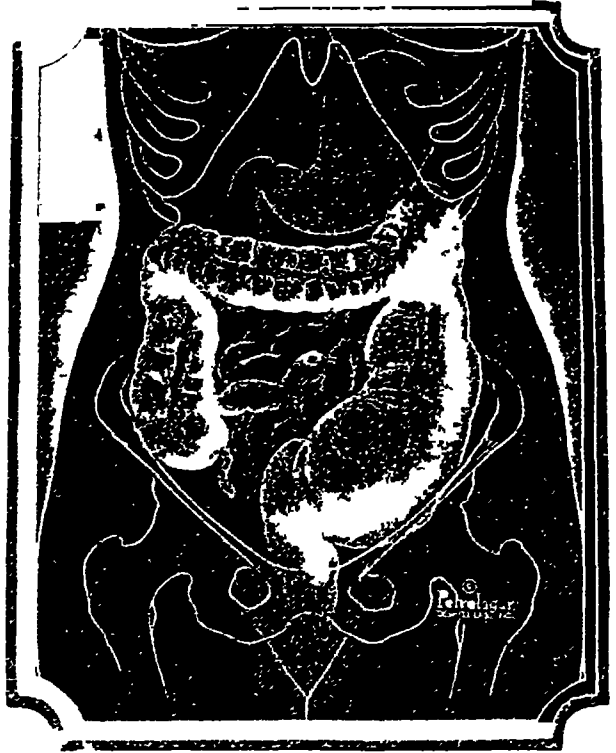
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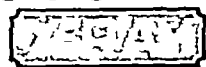
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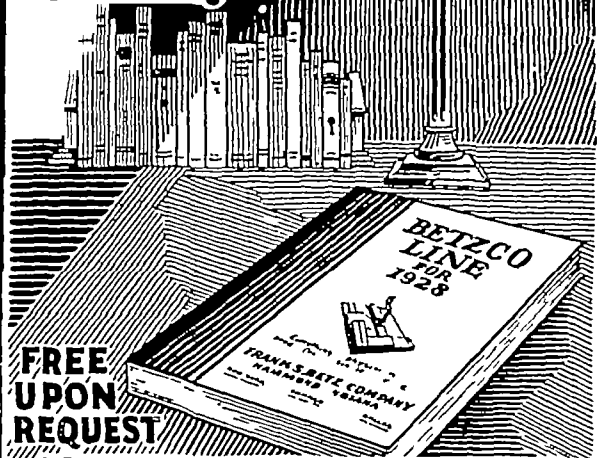
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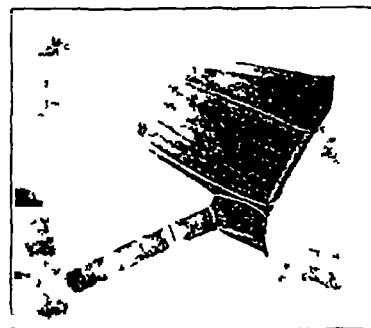
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